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WITH WHICH IS INCORPORATED

THE COAL AND IRON RECORD.

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THE ENGINEERING AND MINING JOURNAL

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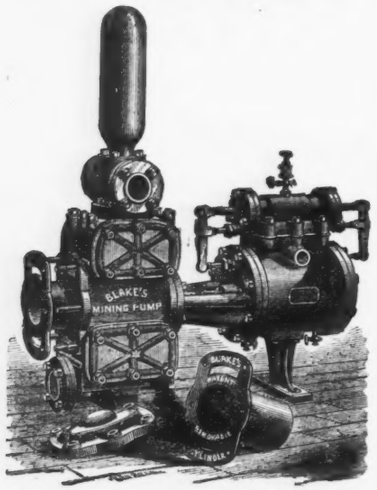

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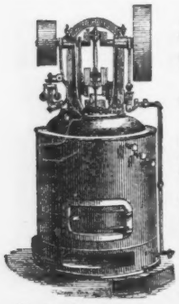

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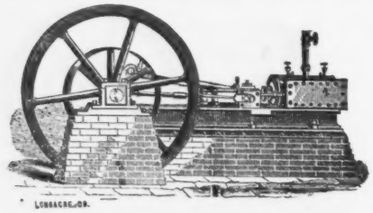

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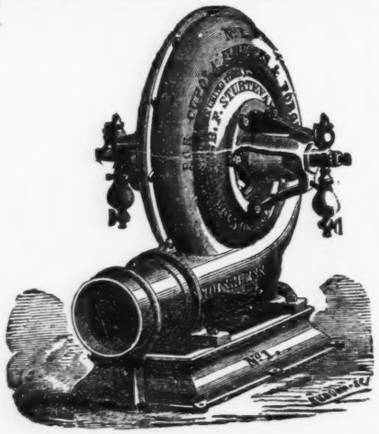

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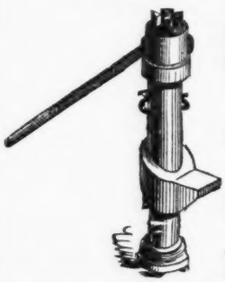

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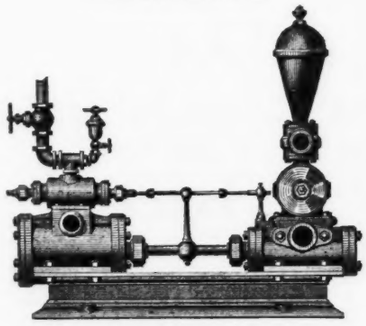

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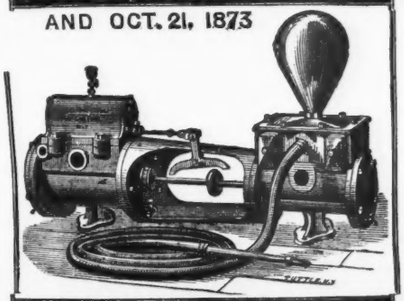

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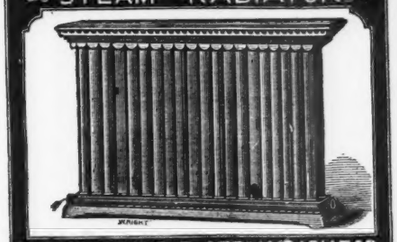

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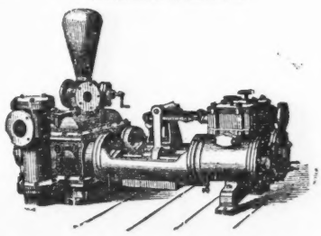

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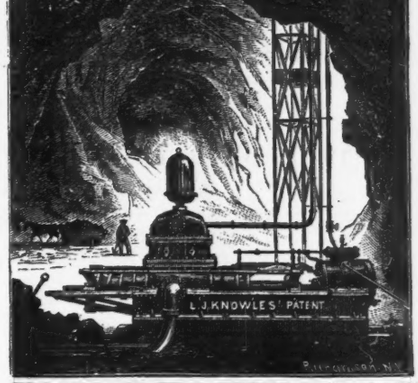

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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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Curious Coincidence in Thought and Language.

THERE is scarcely anything more curious than the wonderful identity of language with which different writers sometimes express themselves upon the same subject. These strange coincidences are not unfrequently set down as plagiarisms by those who have not noted this peculiarity of the human mind; but when we find in the editorial columns of the *Bulletin of the Iron and Steel Association* the following remarkable instance of accidental resemblage of language with an editorial which had previously appeared in the ENGINEERING AND MINING JOURNAL, we cannot refrain from citing it as a case worthy the attention of psychologists.

Editorial in ENGINEERING AND MINING JOURNAL, July 3rd.

The progress of science is rapidly solving the question of economy in the consumption of fuel, by teaching us that carbon should be used in the gaseous form. It is even now evident that the fuel of the future, in almost all metallurgical processes, will be a gas; and the economical production or generation of this from our solid fuel, and its application, have become metallurgical questions second to none in importance.

Editorial in *Bulletin of Iron and Steel Association July, 9th.*

The progress of science is rapidly solving the question of econo uy in the consumptioa of fuel, by teaching us that carbon should be used in the gaseous form. It is even now evident that the fuel of the future, in a great number of metallurgical processes, will be gas; and the economical production or generation of this from our solid fuel, and its application, have become metallurgical questions second to few in importance.

Since it is evident the great ability which illuminates the pages of the *Bulletin* has no need of appropriating the ideas of others, and the well-known courtesy which characterizes every department of the Iron and Steel Association makes it impossible that even this little note could have been copied without credit, every one will doubtless agree with us that this coincidence must be purely accidental. Naturally enough we feel gratified to find the *Bulletin*, with which, unfortunately, we cannot always agree, adopting so closely our own ideas on at least one important subject.

Conciliation and Arbitration—The Result of the South Wales Strike.

THE South Wales strike which lasted five months and occasioned wide-spread suffering to the miners and financial ruin to several large coal and iron concerns, was ended in peace by the men accepting a reduction of 12½ per cent. on the December wages, though the strike was made against a 10 per cent reduction.

The conflict greatly resembled that which has just terminated in our anthracite region, except that with us the companies have an enormous advantage in controlling all the anthracite in the country, so that they can make up, in a measure, the losses of the strike.

The lesson of the strike in Wales appears to have shown both sides the necessity for some other way than the "starving out" process for the settlement of disputes between the men and their employers, for the following rule was adopted by both sides as one of the conditions of resumption :

"That any change in the wages rates after the expiration of three months from the 31st day of May inst. shall depend on a sliding scale of wages, to be regulated by the selling price of coal, the scheme for such scale of wages to be agreed upon by a joint committee of twelve persons, six to be nominated by the employers and six by the men. Such committee to sit before any notice of advance or reduction of wages is given, and should the joint committee be unable to decide upon the basis of a scheme for such sliding scale of wages, or any detail thereof, the solution of such question shall be referred to an umpire, whose decision shall be final. That it be a condition in any such scheme that either party may terminate the arrangement under it on giving six months' notice."

Cannot our great coal companies, now that they have secured the victory, and that the bitterness which attended the conflict is passing away, come to some such agreement with their men? Though the victory was complete, it will not, we fear, be long before the necessity for a further reduction of wages or some other cause will arise, and a rule should now be adopted which will prevent a recurrence of these unhappy conflicts.

Coal Washing and Coke Making Near Pittsburgh.

THE MESSRS. CARNEGIE & Co., who have extensive works near Pittsburgh, are making coke with washed slack coal, with very satisfactory results. The slack coal is purchased from neighboring gas-coal mines at a merely nominal price, and, after passing through a revolving conical screen 6' long and from 4'6" to 5'6" diam., is washed in jigging machines of the old Hartz type, in which the bottoms are fixed and the water forced up through them from an adjoining water cylinder where a piston works. The clean coal is removed from the jig box by the blades of a revolving scraper which carries a little of the coal out of the box at each revolution; the shale and pyrites accumulate in the bottom of the jig box till the man in attendance notices some of these impurities passing out along with the coal. The jig box is then emptied, and the operation is recommenced. This somewhat crude arrangement, though very ingenious in many of its details, presents several objections : it is wasteful of coal, for a portion is thrown away in emptying each jig box ; it allows a certain amount of impurities to go out with the coal, an amount depending on the vigilance of the attendant ; its operation is intermittent, and yet its results are, on the whole, satisfactory.

There are four jig boxes, each 7'6" long x 3'6" wide, worked at Messrs. CARNEGIE'S works, and we are informed, 400 tons of slack coal can be washed on them in a day of 9 hours. The plunger is worked at the rate of 80 strokes a minute, the stroke being 4 inches ; the power required to drive the whole apparatus is provided by a small engine, 12"x24", which is found much more than sufficient when working with a steam pressure of 40 pounds.

As the slack used comes from the mine, it contains about 1 per cent. of sulphur, with a considerable quantity of shale ; the washer removes about 10 per cent. of the charge, some coal being thrown away with the shale, and the coke made from the washed coal contains about one-third of one per cent. sulphur. The cost of washing is stated to be about ½ cent per bushel, say, 12 cents per ton of 2000 lb. The total cost of the four washers and machinery for working them is about $5,000.

The coking is done here, as everywhere else near Pittsburgh, in bee-hive ovens, 140 of which are in use. These are 11 feet diameter, 6 feet high, are built of fire brick, and cost about $350 dollars each. They hold about five net tons to the charge, and the operation of coking lasts 48 hours. Washed slack coal is alone used, and it yields about 57 to 60 per cent. of coke. The coal is from the gas-coal mines, and is very bituminous, which is given as a reason for the use of the bee-hive ovens. The Coppée oven has never been tried in the Pittsburgh region, but at one time a species of Belgian oven, about three feet wide, was tested and did not give as satisfactory results as the old-fashioned bee-hive. We nevertheless think that the adoption of the narrow Coppée oven would be found advantageous, both in the facility and consequent economy it would effect in the manipulation of the coke, and in the superior quality of the coke it produces. The 140 ovens now in operation make 170 tons of coke per day from about 300 tons of washed coal.

As the slack costs little more than the railroad freight from the mines to the ovens, and as the coke produced finds ready sale, at fair prices, for the furnaces in the vicinity and at Pittsburgh, this enterprise is very successful.

The Statistics of Coal Production.

OUR rabid contemporary, the Pottsville *Miners' Journal*, is very hard to please. When it published its Table of Coal Statistics, it put down the total production of bituminous coal, mined in 1874, at 19,409,671 tons, (short and long tons mixed.) Our returns, which are by far the most carefully compiled statistics of the coal trade that have ever been made in this country, show the amount of bituminous coal mined in 1874 to have been 26,465,704 tons of 2,000 lb.; or about seven million tons more than the above figure, yet the *Journal* now complains that for Illinois our returns are too small! Conscious of its total ignorance of the subject, our contemporary does not venture to criticise our figures, unless the three following remarks may be called criticisms :

1. It commences with the characteristic misstatement that our figures "are based principally on the reports of correspondents;" whereas we distinctly say that of the total production, 50,747,175 net tons, the reports direct from the mines to this office covered 44,361,175 tons, and the "reports of local authorities," and "our correspondents," were 6,386,000, or about 12 per cent. only.

2. The so-called "official" coal statistics of the Pottsville *Miners' Journal*, so far as they relate to the bituminous coal, have been mere guesses, based for the past five years on the notoriously incorrect Census Report of 1869, and because, forsooth, these ludicrous "statistics" do not agree with our returns from Pennsylvania, and without a single fact or figure to support its assertion, it thinks our figures are about 2½ million tons too high. The fact being that our reports direct from the mines cover about 35,000,000 tons out of a total of 36,547,615 tons produced in Pennsylvania, and the balance of 1,500,000 tons was an under, rather than an over-estimate of the quantity of coal produced and used at furnaces, iron works, salt works, by the railroads, and sold at certain mines, not reporting to us. As to our contemporary's statement that "it would like to know where the increase comes from," we have no doubt it would. It cost us an immense amount of labor, and some money, to learn what is now produced ; and in order to ascertain what the increase has been over any previous year, it would be necessary to *know* what was produced at that time, and not merely to make a Pottsville guess at it.

3. As to the assertion, that we under-estimated the production of Illinois, we would say that rather more than half of the amount given in our table was based on reports made by the railroad companies, last winter, to the Legislature of that State. And we take it for granted that an official State report (though we confess we have no great respect for such documents in general) is more nearly correct than a Pottsville "estimate" based on the Census Report,

which is little better than a five year old guess. Should the full reports we are now procuring officially for the Government Department of the Centennial Exhibition, show the production of Illinois to be greater than 2,577,095 tons, at which our report places it, it will simply increase the error, already over 7,000,000 tons, which the Pottsville *Miners' Journal* has made in its "official estimates."

We can make large allowance for the wrath of the *Miners' Journal* mountebank, seeing that we have pretty thoroughly exposed the utter worthlessness of the "statistics" of which he has made so much capital for a number of years.

We expected no very complimentary remarks for exposing his tricks and shams, hence the hard names he uses so profusely in lieu of arguments have no more effect than would the like epithets from any other individual of the same class whose little game we should happen to spoil; but we confess to some surprise that a journal which shows so much vitality and evident desire to keep up with the times, as does the Pottsville *Miners' Journal*, should prostitute its pages to the vile, and, withal, stupid ravings of that relic of an age of journalistic rowdyism which has now, happily, almost entirely passed away.

English Winding Engines.

THE following elaborate and useful table, which we take from the *Colliery Guardian*, gives the principal dimensions, etc., of the finest English winding engines, and will be found of service and interest to many of our manufacturers and mine owners.

Beyond question, we have made an enormous progress in the machinery used at our anthracite mines in the past eight or ten years, but in some respects we are very far behind the English. This is most notable in the speed of winding or hoisting. We have few mines that attain a speed of 1200 feet a minute in the shaft, and we know of none exceeding 1500 feet maximum speed in regular work, while one of the examples here given has an average speed in hoisting of 2,590 feet per minute and a maximum speed of 5,100 *feet, or almost a mile a minute*, in mid shaft. This prodigious velocity has never been thought of here; in very few of our mines, indeed, would anything like it be desirable. Their depth being so moderate, there is no need of great velocity; the practical limit is the time necessary to remove one car and bring in another at the head or foot of the shaft, and nothing is gained by making the trip in less time than it takes to do this. On the other hand, the time occupied in "handling" the cars at the head and foot of the shaft is much greater in England than here, owing, doubtless, to the fact that two, four, and even six, small cars are raised at the same time on double or triple deck cages in the English mines. In our anthracite region, a three-ton car—and but one raised at a time—can be changed in from seven to ten seconds regular working time, while according to this table in the English mines it requires from twenty to thirty seconds to do the same work.

NEW PUBLICATIONS.

ECONOMIC GEOLOGY IN ITS RELATIONS TO THE ARTS AND MANUFACTURES. By Prof. PAGE, of Durham University, Newcastle-on-Tyne. BLACKWOOD & SON, London, 1874.

This well-written work is somewhat new in character. While there are many works on the special branches of economic geology, on building stones, cements and mortars, ores, veins and lodes, agricultural geology, etc, very few have been written on the general subject, with the object of giving a broad view of the whole field. Prof. PAGE is already well known by his various works on geology and kindred subjects, most of which have been of a popular character. This is avowedly written as a text-book for students, and as such is almost the first of the kind on the subject. But while it is intended more especially for students, it is a volume that would be a valuable addition to any geologist's, miner's, or prospector's library. In about 300 well-printed pages he has concisely arrayed all the more prominent observed facts in exact and non-technical language. The book begins with a chapter on the *Rocky Crust* of the Earth, and deals briefly with the character, composition, classification, and chronological arrangement of rocks and rock formations. Then follow some valuable general chapters on *Geology and Agriculture*, treating of soils, subsoils, drainage and mineral manures; *Geology and Land Valuation*, dealing with the agricultural and mineral, or geological values of land; *Geology and Architecture*, having to do with building and decorative stones, limes and mortars, cements, concretes and artificial stones; *Geology and Civil Engineering*, showing in how important a manner a knowledge of geology may be used in road making, railway construction, canals, docks and harbors, river improvements, and the water supply of towns; finally, *Geology and Mine Engineering*, having to do with quarrying, mining in stratified deposits, mining in veins, and placer workings. The other chapters of the book are on heat and light producing materials, clays, grinding, whetting, polishing and refactory substances, pigments, dyes, salts and saline earths, mineral springs and medicines, gems, and metallic ores. The text is clear and well illustrated, and to each chapter is appended a list of works which may be consulted for further information. This last feature might be adopted with great advantage by all scientific writers. To students, miners, farmers and many others this book will prove valuable.

THE PRINCIPLES OF METAL MINING. By J. H. COLLINS, F. G. S. G. P. PUTNAM & SONS—New York. 1875.

THIS little book is published as one of PUTNAM's Elementary Science Series. It is written especially for the use of young students and miners. Its object is to give elementary ideas concerning the methods of mining. It contains a good deal in small compass, and an extensive circulation among mining workmen would do much to increase their general knowledge. Any one having

TABLE SHOWING SOME OF THE PRINCIPAL FACTS

Name of the Colliery at which the Winding Engine is situated.	Description of the type to which it belongs.	Number of Cylinders.	Diameter of Cylinders.	Length of Stroke.	Pressure of Steam observed in Cylinder.	Maximum Vacuum in Cylinder.	Maximum Velocity of Piston.	Mean Velocity of Piston.	Description of Valves.	Diameter of Steam Valves.	Diameter of Exhaust.	Lift of Valves.	Area of Port.	Ratio of Area of Port to Area of Cylinder.	Diameter of Steam Pipe.	Length of Steam Pipe.	Diameter of Exhaust Pipe.	Maximum Diameter of Drums.	Minimum Diameter of Drums.	Mean Diameter of Drums.	Weight on Counterbalance at Start.	Maximum Diameter of Counterbalance Drum.
			In.	Ft.	Pounds per sq. in.	Pounds per sq. in.	In. ft. per min	In ft. per min		In.	In.		Sq.in.		In.	Ft.	In.	Ft.	Ft.	Ft.	Tons	Ft.
Harton Colliery	Vertical, condensing, balanced	1	65	7	16	9½8		176	Double beat brass orCornish	13	14		114	1-21				27	25	26		
Monkwearmouth	Vertical, condensing, balanced	1	68	7	19 to 20	10⅛	300	224	"	15	15	1⅛1¼	about the same ratio		17	66	13	25	22	23½	10	8¾
Usworth	Horizontal, high-pressure, balanced.	1	48	6	36		320	232	Lifting slide valve.	13	13	2⅛			11½	77		22⅓	20¾	21	4½	7⅝
Denaby	Coupled, horizontal, high-pressure, unbalanced.	2	42	6	42		700	360	Cornish.	13	15	1⅛1⅞	80	1-17	Branch 9⅝		10	18	18	18	None.	
Boldon*	Coupled, horizontal, high-pressure; compensating drum.	2	40	6	35		410	253	"			2, 2½						26	16	21	None.	
Douglas Bank	Coupled, horizontal, high-pressure; compensating drum.	2	30	5	49		462	260	"		10		48	1-14	Main 10	50	8	25⅓	18	21.98	None.	
Rose Bridge†	Coupled, horizontal, high-pressure, unbalanced.	2	36	6	53		720	376	"	9		1¼1¾					18	27⅔ 23¾	25 20¼	26½ 22	None.	
Houghton-le-Springs	Coupled, horizontal, high-pressure; cone drum.	2	34	6	30 to 40		522	291	Piston slide valve.			8					12	18⅓	16.83	17.58	None.	
Cinderhill, No. 1‡	Single, vertical, high-pressure, balanced.	1	40	5	40 to 42			300	Cornish.		13	⅞, 1¾						15·4	13·2	14 3	1 1-5	3½
Hucknall, No 2‡	Coupled, horizontal, high-pressure, unbalanced.	2	36	6	48			376	"	12		1¼1¾						18.3	15 4	16·9	None.	
Kiveton Park‡	Coupled, horizontal, high-pressure; compensating drum.	2	36	6	48			228	"			1¼1¾						30	20·6	27·7	None.	
Kiveton Park‡	(Observed another time.)	2	36	6	48			228	"			1¼1¾						30	20 6	27·7	None.	
Biddick	Coupled, horizontal, high-pressure, engine and boiler; drum on second motion.	2	12	1 1-6	80		560		Slide.									8	8	8	None.	

* This Engine, at the time of observation (1871), was not doing more than half the work for which it was intended, and of which it is capable.
† The Drums are of different sizes; one winding from a depth of 807 yards, and the other 674 yards.

WEALE'S series of manuals can safely add this book to them, as a little work worth having. Appended is quite a full glossary of mining terms—both English and Cornish. The value of this book would have been increased by appending to each chapter a list of books of reference for fuller information. We hope Messrs. PUTNAM will introduce this feature in their various Science Series.

The Comstock Lode in 1874.

From the forthcoming Report of the United States Commissioner of Mining Statistics.

CONTINUED FROM PAGE 2.

THE Virginia Consolidated shaft penetrates the 1500-foot level, 100 feet east of the west wall of the Comstock, and about 20 feet south of the California Consolidated south line. At 142 feet directly east from the shaft, ore was first encountered, having a N. 48° E. course, and dip being 65° E. It was penetrated diagonally to its course for 145 feet, showing ore of $700 average assay value, and bounded on the east by a clay-seam, which I do not consider to be the true "east clay." This cross-drift, 20 feet south of the California Consolidated south line, is called *Cross-Cut* No. 1, and cuts through the ore body at an angle of 50°, giving therefore not exactly a cross-section. The ore here is composed of stephanite and the peculiar subsulphide characteristic of the Comstock. Copper pyrites and argentiferous fahlore occur with it. The metalliferous mineral occurs in seams of a few inches to several feet in thickness, and penetrates the entire mass of quartz for 145 feet. The gangue is quartz, no lime being visible, except very close to the eastern clay, where here and there bunches of calcite are found. At these points the character of the ore also changes a little and partakes of the nature of the ore which is found in the southern portion of the Comstock—for instance, in Belcher and Crownpoint. One hundred feet directly north from this cut, No. 1, is No. 2, which went through quartzose vein-matter for 157 feet (therefore 177 feet east of the shaft) before meeting with the same ore and some thin western clay-partings. It penetrated the ore for 100 feet, when the latter was cut off on the east by feldspathic porphyry. Further explorations will have to be made eastward at this point, as this cannot be the final eastern boundary of the body. The character of the ore is the same as in No. 1 cut. One hundred feet directly north from No. 2 cut is No. 3, which cut into ore 240 feet east of the shaft. Up to April 2, 1875, this cut had penetrated 25 feet into the ore, which is not of as good quality as that shown by No. 1 and No. 2, and will perhaps not be found as wide as it was in No. 2. No east division has as yet been encountered. One hundred feet north of cross-cut No. 3 is No. 4, 300 feet south of the Ophir south line. It has penetrated, so far, 90 feet east of the main N. and S. drift, which makes the point reached 110 feet east of the shaft. It is in the same material which constituted the ground west of the ore further south in cuts 1, 2, and 3, but here, as well as in No. 3, small seams of ore are found. In this cut, at 50 feet east of the main north drift, ore has been found 8 feet wide. It seems to run almost parallel with the ore body developed in No. 1, 2 and 3; but it is 180 feet further west, carries much more zincblende, and is of much poorer quality. It is probably connected with the western ore-seam of the 1464-foot level in Ophir, and can hardly be distinguished from the ore found at 360 feet depth in the Ophir workings of former years. Further north from No. 4, no work has been done eastward from this level; but the main drift running north extends into the Ophir ground and connects with the 1464-foot level of that mine.

Going south from cut No. 1, 100 feet, is cut No. 2 of the Virginia Consolidated. This encountered the thin western clay-seam of the ore-body about 40 feet east from the main N. and S. drift, and penetrated for 50 feet through material resembling that through which California Consolidated cut No. 3 passed for 30 feet. It is not a high grade ore. For 50 feet further east (beyond the 50 feet just mentioned), the ore is a little better, but still retains the character of the ore found in the more northerly cross-cuts. Passing further east the quartz changes, and the drift (or rather cross-cut) enters into a different material, quartz predominating, but accompanied by lime, the ore losing more and more its base ores. The cross-cut penetrates 200 feet further through this ore ($150 ore) until, 350 feet east from the main N. and S. drift, it meets the east clay, which runs here N. 20° E., standing nearly vertical.

Again, 100 feet south of No. 2 cut, is No. 3, which encountered the western small clay-seam of the ore 65 feet west of the main N. and S. drift, and was driven east for 35 feet, where a heavy clay-body was met, which is the east clay of this described ore-body. It runs here N. 50° E., and stands nearly vertically. One hundred feet further south from here is a winze, which connects with the 1400-foot level, and which shows ore, for 60 feet below the 1400-foot-level, of the same character as cross-cut No. 3 shows at the 1500-foot level. The sketch herewith given will afford probably a better notion of these work-

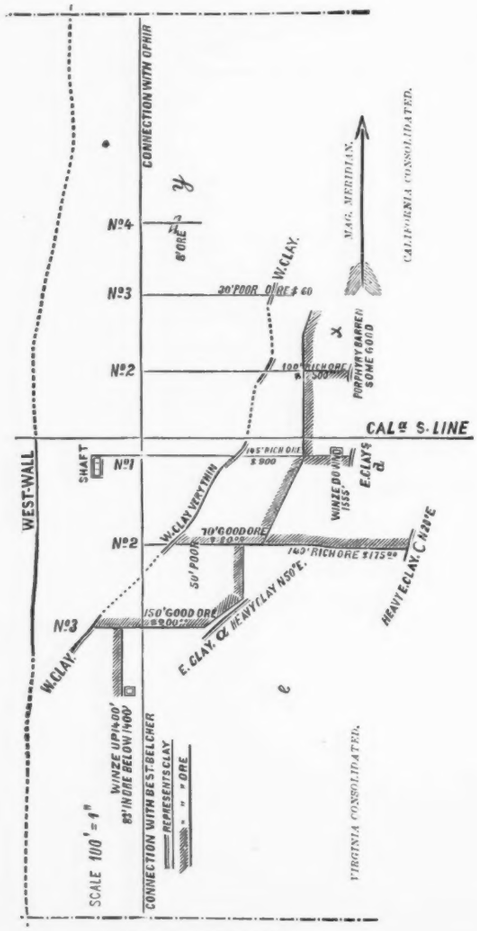
RELATING TO ENGLISH WINDING ENGINES.

Total weight of moving parts, that may be taken as moving at the same velocity as the Cages.	Total Weight of Moving Parts.	Number of Revolutions of Drums per Journey.	Mean number of Revolutions per Minute.	Description of Ropes.	Weight per Fathom of Rope.	Material of Cage.	Weight of Cage.	Weight of Trams.	Weight of Coal.	Mean Speed of Cage in Shaft.	Maximum Speed of Cage in Shaft.	Depth of Lift.	Time occupied each Journey.	Time occupied in Landing, &c.	Tonnage per Hour.	Power exerted by the Engine each Journey, in foot-pounds.	Duty done each Journey, as measured by Weight of Coals and Height lifted.	Ratio of Power to Duty.	Ratio of Maximum Pressure on Piston to Lift at commencement.	Number of Boilers and description.	Dimensions of each Boiler.	Heating Surface.	Grate Surface.	Maximum Indicated Horse-power of Engine.
	Lb.				Lb.		Cwt.	Cwt.	Cwt.	Ft. in a minute.	Ft. in a minute.	Ft.	Seconds	Seconds	Tons	Foot-lb.	Foot-lb.	Per cent.			Ft.	Sq. ft.	Sq. ft.	No. of H. P.
	208,000	15·6	12·5	Flat iron wire 6½ x ⅞ in.	42	Iron	50	30	54	1020		1278	75	30	91	10,342,350	7,729,344	75	100:50	Cornish 10 At work, 6				
	280,000	23¾	16	Flat iron wire 6 x ⅞ in.	43	Steel	35	33	50	1180	1630	Say 1740	89	35	72½	15,403,000	9,744,000	63	100:42	At work, 6	33x7½	400	55	422
		14½	19½	Iron wire, flat	28½	Iron	22½	16	36	1300	1706	966	45			5,281,107	3,956,178	74	100:37½	Externally fixed, 5	50x6	300	42	344
80,000	158,000	23¾	30	Iron and steel round rope	29& 23	Iron	48	19	40	1691	3080	1351	47	21	102	12,120,000	6,300,000	50	100:48	8 plain, 7 at work	30x5½ 30x6	Say 2.0	35	950
		19½	21	Steel 1⅜ in. round rope	27	Iron	40	15½	24½	1689	2788	1548	55			7,470,000	4,077,000	53½	100:36					470
	133,900	22·6	26	Steel, round	11	Steel	20	12	24	1765	3100	1530	52	25	56	6,851,700	4,131,200	60	100:37					461
80,000	148,000	29¼	31½	Steel, flat, taper	Average 22	Steel and Iron	22 34	22	26	2590 2166	5100 4302	2418 2022	56	25	58	19,196,400	6,464,640	33·7	100:30	Plain, externally fixed, egg ends 8	36x5½			900
		13½	25	Iron, round 1⅜ in.	21	Steel	18	15	35·8	1302	2436	738	34	25	110	4,375,596	2,700,000	61	100:43					497
60,480		14¾	29½	Iron, flat	33	Iron	25⅝	25	33	1370		666	30	30	91	3,363,568	2,460,000	73		Plain, externally fixed, egg ends 6	36x5			‡
67,200		23½	31¾	Iron, flat	29	Iron	30	11	45	1652		1239	45	25	128	10,542,411	6,265,023	59½	100:58	6	40x5½			‡
134,400		14⅛	19	Round	18	Iron	20	22	22	1624		1218	45	15	90	7,165,905	3,000,026	41·8	100·29					‡ ‡
27,760		14⅛	19	Round	18	Iron	48	8	44	1624	1500	1218	45	25	120	7,955,782	5,999,948	75·4	100:29					
		27	33	Iron, round	8	Iron	9⅛		12	821		684	50				919,296			1 multitubular boiler, forming foundation for engine.				150 to 200

‡ Not observed with Velocimeter, therefore the Horse-power cannot be accurately stated, but Hucknall and Kiveton appear to develop about 1000 H.P.
§ Hot summer evening; a better vacuum in the morning and in cold weather.

ings than a further detailed description. The following explanations refer to the sketch:

OPHIR.



BEST & BELCHER.

The strike and dip of the E. clay at *a* in cross-cut No. 3 of the Virginia Consolidated correspond with those at *b* of cross-cut No. 1, while those at *c* do not. The ore in the eastern portion of cross-cut No. 2 in Virginia Consolidated is different in character from that found in cross-cut No. 3 of the same mine, and that of cross-cuts Nos. 1, 2, and 3 in the California ground, but resembles the ore found in the 1300-foot level of the Virginia Consolidated, 400 feet north of that company's south line. Furthermore, the ore found in cross-cut No. 4 of the California ground, and that found in Ophir, are identical. Mr. LUCKHARDT infers that three distinct ore-bodies exist, but they are of too large dimensions and, in consequence, have been too little explored to permit speculation with any accuracy as to their position and inclination. The northerly and westerly one (in California No. 4 and in Ophir) seems to be composed of detached ore-seams, sometimes running parallel to each other, which are embedded in a quartzose porphyritic mass, 150 to 250 feet wide. The central body, which has a western clay-seam, running very regularly and separating it from the above, shows a narrowing at cross-cut No. 3 in the California, and the winzes sunk below the 1500-foot level prove that the ore descends southward. The clay at *a* resembles the clay at *c*, but also that at *b*; and, unfortunately, the stopes, etc., at cross-cut No. 2 in Virginia ground do not allow of an examination, whether *a* is connected with *b*. But it is not likely that the clay swings from *a* to *b* and back to *c*; and Mr. LUCKHARDT does not consider *b* to be the proper east clay. The porphyry which is encountered in cross-cut No. 2 in the California ground to the east of the ore, may be an intrusion and may have caused the narrowing of the ore in cross-cut No. 3 in the California, and its apparent widening in cross-cut No. 2 in the Virginia. Mr. LUCKHARDT concludes therefrom that it may be possible that the clay at *a* and *c* is the same, and that the porphyry at No. 2 California had some influence upon the ore west of it, while south and east of it it had none, or *vice versa*. It is noteworthy that while the feldspathic porphyry, which constitutes almost exclusively all the so-called "horses" of the Comstock lode, is invariably void of all precious metals, there is at *x*, in California cross-cut No. 2, a porphyry-belt close to the ore-body, in which the pyrites (so characteristic of the eastern porphyries) is replaced by silver ore in places, so that it showed $10 to $20 per ton by assay, though barely to be distinguished from the porphyry further east in outward appearance. It may be, therefore, that by pushing considerably eastward the work at *b* and *f* and further north, the clay *c* will be found beyond this porphyry. This would prove the entire ground for over 900 feet N. E. and S. W., and for 300 feet S. E. and N. W. to belong to one ore-body.

The west wall of the Comstock, as indicated by present workings, is supposed to have in this place a nearly N. and S. direction; and the western boundary of the ore-body must meet it on the south at an angle of 40° to 45°, while the eastern boundary of the ore must meet it to the south at an angle of 65° to 70°. It is possible that this ore-body will be found to flatten against the west wall of the Comstock fissure, run with it, and widen again to the southward. Should this be the case, we would naturally expect at *e* some intrusion, different from the vein-matter, which has so far been exposed at *e* for 300 feet in depth. But the quartz developed by the 1200-foot level at the south line of the Virginia Consolidated mine, which carried $40 per ton, is to all appearances very massive, as is also the quartz which, on the 1300-foot level of the Virginia Consolidated, lies 400 feet north of the company's south line, and carries fine ore. Considering also the 300 feet length of ore, 90 feet wide, which the 1400-foot level of Virginia developed, it appears that the facts will hardly sustain the theory just mentioned; and it seems more probable that a third ore-body, lying *en echelon* with the other two, will be developed to the south and east, appearing in the 1600-foot level in Best and Belcher. But this difficult question requires further light from connected explorations and careful study.

Contrary to the generally accepted theory, Mr. LUCKHARDT is of the opinion, that the main bulk of this ore (whether it prove in time to be one or two bodies) will be encountered in the Virginia ground and south of it, rather than in the Consolidated Ophir and further north. The greater amount of explorations in depth to the north (aided, perhaps, by speculative purposes) has created an impression that the northern ore-body, shown on the sketch in California cross-cut No. 4, and the ore found in the Ophir, prove the northward extension *and the* northward pitch or inclination of the great *bonanza*. But it is more likely that they belong to a parallel outlying body or group of seams, and that the middle body *is not* connected with them.

It is impossible to estimate the amount and value of ore standing in the Virginia and California ground. As has been remarked, the ore varies in quality. Extraordinarily rich streaks are met with. In some places for 50 feet (in the cross-cuts) the ore assays $900, and, again, sections of 200 feet assay $150. Cross-cut No. 2, in the California, for 80 feet (across the ore) assays $412 per ton, and, on the other hand, in some places the ore will not assay above $50, as, for instance, for 50 feet in Virginia Consolidated cross-cut No. 2, near the west clay. Fabulous reports and estimates have been given, varying from 150 to 1500 million of dollars "in sight." It is reasonable to suppose that the ground from the Best and Belcher north line to the Ophir south line, and in depth from the 1300 to the 1550-foot level, will yield (judging from present developments and present yield) ore for two years to come at the present rate of extraction, viz., 450 to 580 tons daily. The quality of the ore is a matter of pure speculation. At present, the average is about $150 per ton, but $300 to $500 ore can be extracted at will, by selecting the stopes. Mr. LUCKHARDT thinks that $160 may possibly be an average of the whole mass referred to; but this is merely a prudent guess. At this rate there would be over $60,000,000 "in sight." But such calculations are at present futile. The width and length of the ground to be exploited necessitates considerable care in working. Experience has shown in the south portion of the Comstock that the present mode of timbering, although convenient for wide spaces, is deficient in strength. The "caving" of timbered spaces has caused the loss of good ore ground. To obviate this difficulty the ground is now worked in sections of 50x60 feet and timbered in the old way; but every fourth set is then filled up with heavy 10x12 and 12x12 inch timbers across the whole 60 feet and up to the top of the stopes—all well keyed in, so as to form a solid bulkhead of timber. Narrow passages are left at long intervals, and the rest of the space between the bulkheads is filled with waste from the upper or lower prospective works. It is a very expensive method, but cheaper than masonry would be.

The Consolidated California is not as yet producing ore, and it will be some time before the shaft will be completed. The adjoining mines need the full capacity of their respective shafts to hoist their own ores.

The Virginia Consolidated Company has erected a very fine mill, close to the shaft, capable of reducing 250 tons of ore daily. A tramway leads to the mill from the shaft. It is the intention of the present manager to erect another and smaller mill of 25 tons capacity for the treatment of the first-class ores, which will need roasting.*

A connection with Gould and Curry and Ophir, in the lowest levels of this mine, secures ventilation.

Adjoining the Virginia Consolidated to the south is the Best and Belcher, which has been explored, within the past year, to a small extent, through the Gould and Curry workings. It was close to the south line of this mine that, two years ago, the first signs of the now exposed bonanza were discovered. It has no separate shaft or hoisting works of its own. In its ground, at 1200 feet depth, the above-mentioned quartz-body was found, which will, when well explored, lead undoubtedly to the finding of much good ore. In the 1500-foot

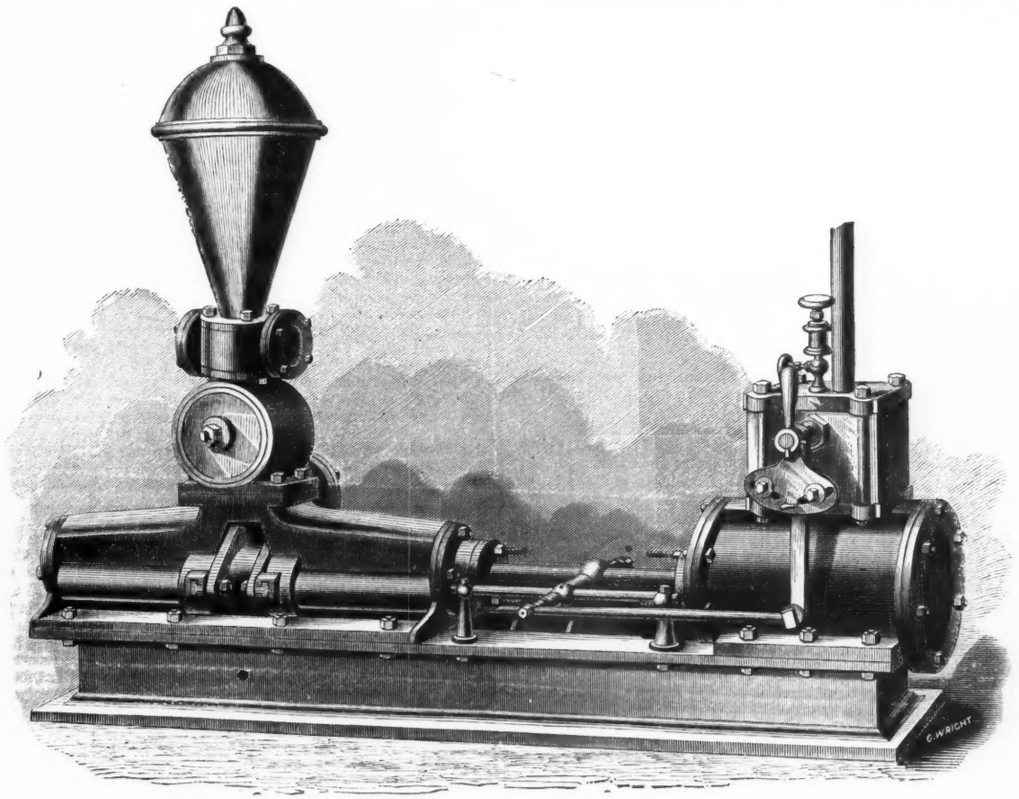
* The ore from this ground of the Virginia and California Consolidated mines has the peculiarity that the lower workings show an increase in the proportion of gold over the ore from the upper levels (1300 and 1400-foot levels).

level, at the Gould and Curry north line, a winze was sunk, which penetrated into the west wall and met some ore. Assays run from $5 to $25. This work is west of the quartz and is comparatively dry. It was continued to the 1700-foot level, and drifts N. E. and S. E. were run from it which met some ore, sustaining the opinion above suggested, that the ore from the Virginia will find its deepest point south. Work is progressing slowly here, and the cross-cutting eastward cannot be continued much further, as the Gould and Curry has, at the 1700-foot level, all the waters of the Virginia and California Consolidated levels, down to 1550 feet, to contend with, and fear is entertained that if this quartz is broken into it will flood the works. This flow of water is an indication that the quartz masses of the two mines named pitch southward, through Best and Belcher, into the Gould and Curry 1700-foot level.

TO BE CONTINUED.

The Niagara Double-Acting Plunger Pump.

THE Niagara Direct-Acting Steam Pump, manufactured by CHARLES B. HARDICK, of 23 Adams street, Brooklyn, has so long and successfully withstood the tests of actual practice in mines in various parts of the country, that it seems almost a work of supererogation to again describe its make. The accompanying cut illustrates one of the forms best adapted to mine use, on account of its simplicity, strength and efficiency. We have here neither piston rings nor interior packing, hence no necessity for the removal of the cylinder heads,



THE NIAGARA DOUBLE-ACTING PLUNGER PUMP.

there being one plunger operating both cylinders, to pack which it is only necessary to unscrew the nuts shown at the center of water cylinder, slip the caps of stuffing box back, insert the packing in stuffing boxes, replace the caps, and all is done. Among the advantages of this well-known pump may be mentioned the fact, that, as far as consistent with durability, it is cast in separate parts, so that, in case of accident or breakage, only the part immediately affected need be replaced, as the cylinders are separate from bed-plate, water valve-chest, discharge and air-chamber.

The arrangement of patented water-valves in this pump is such that in case of obstructions entering the valve chamber through the suction pipe, the valves may be taken out, cleaned and replaced in the shortest possible space of time, for which half a minute has been found sufficient on occasion; to extract water valves, it is only necessary to remove one nut, no further fastening being requisite, as the valves are four square pieces of metal, kept in place by a bonnet. Valves on each face present an accurately fitting surface to valve-seat in chest, so that each of the four surfaces may be successively used. When in the course of years these surfaces are exhausted, if emergency requires, blocks of hard wood of like form and surface may be used with equal facility and reliability.

The valves are usually made of composition, and for mining purposes may be faced with leather, or *vulcanized rubber valves* will be furnished whenever they are preferable.

Its patent steam valve insures its starting, whenever steam is let on—it matters not at what point of stroke the piston may be—and it can be run any rate of speed.

In mines and quarries, it has acquitted itself to the entire satisfaction of those who have used it; should it become submerged in the mine, it will start upon turning on steam from the boiler at the top of the shaft, and work notwithstanding the condensation of steam incident to carrying it to the pump. Its superiority herein has been proved in the mines of Pennsylvania, Colorado, and elsewhere, when working from 15 to 40 feet under water.

This pump has long passed the experimental stage, and its reputation as a reliable, economical, and in every way satisfactory engine is fully established

CORRESPONDENCE.

The Blair Process—Letter from Mr. I. Lowthian Bell.

TO THE EDITOR—SIR: The *American Manufacturer*, of May 27th, contains a letter from my friend, M. MORRISON FOSTER, pointing out certain errors he alleges I have committed in describing Mr. BLAIR'S direct process of reducing iron. The ENGINEERING AND MINING JOURNAL, of June 5th, gives an account of a meeting of the American Mining Engineers, in which the same subject is referred to.

I am most unwilling to misrepresent, however slightly, any matter connected with Mr. BLAIR'S invention, of which, on the whole, I thought sufficiently well to have expressed a wish to see it tried in England.

My mistake, it would appear, consists in stating that two parts of pig iron and one of sponge iron lost 20 per cent. in the melting furnace, no such proportions having, Mr. FOSTER says, ever been employed.

I admit at once that the few words into which I was obliged to condense my observations have prevented my putting the case as clearly as it might have been done. In making my former calculation, I had in view a charge which consisted of

Pig iron, 2974 lb.; scrap steel, 1178 lb., together	4152	lb.
Sponge iron	2130	"
	6282	lb.
Gave ingots, 4333 lb.; scrap steel, 1040 lb., together	5373	"

Loss equal to 14.47 per cent. which added to that previously experienced on the scrap steel delivered, brings up total waste to 17.19 per cent. Proportion of pig and scrap to sponge 1.949 to 1. A second charge consisted of

Pig iron 2753 lb.; scrap steel 1287 lb., together	4040	lb.
Sponge iron	2800	"
	6840	lb.
Gave ingots, 4672 lb.; scrap, 952 lb., together	5624	"

Loss equal to 17.77 per cent. which, added to that on the scrap steel delivered, gives a total of 21.11 per cent.

I will now shortly give the reasons which lead me to the belief that there is an excessive waste in fusing the sponge which was the object I had in view in my remarks on Mr. BLAIR'S process.

Eleven casts inscribed in my memoranda (particulars sent to Mr. FOSTER) which were taken at random from the charge-book at the works, give the following average results:

Average weight of pig iron per charge..... 2849 lb.
" " " scrap steel per charge... ..... 1287 "
" " " sponge iron per charge..... 2895 " together 7031 lb.
Gave ingots, 4672 lb.; scrap steel, 952 lb..... " 5624 "
Loss in melting, 20.01 per cent..... 1407 lb.

At Firminy, in France, a mixture of 42 parts of pig and 58 of malleable iron, I was informed, lost by fusion in the Siemens-Martin furnace 6 per cent. Of this waste, it is only fair to suppose, the pig iron, from its composition, must bear the greater share. I have based my comparison in Mr. BLAIR's case on

42 of pig iron losing.....8.25 per cent. = 3.46 } =6.07
58 of wrought iron or steel losing 4.125 " = 2.61 }

Applying these figures to the proportions given above we have :

Pig iron.....2849 lb.	losing	8.25	per cent.	=	235 lb.	waste
Scrap steel...1287 "	"	4.125	"	=	53 "	"
Sponge iron..2895 "	"	38.6	"	=	1119 "	"
7031 lb.					1407 lb.	

In these eleven casts, the pig iron and scrap steel bear to the sponge the ratio of 1.43 to 1, instead of 1.949 to 1; but then it will be remarked, the increase in the quantity of sponge has been attended with a considerable augmentation in waste when compared with the previous computation.

In my address to the Iron and Steel Institute I did not distinguish scrap steel, but in this I did Mr. BLAIR no injustice, seeing that this large item of the charge had already borne a heavy loss in a previous operation. It may, perhaps, be contended that scrap steel, owing to adhering impurity, will lose in the furnace more than the clean wrought iron at Firminy. Admitting this, it must be remembered that scrap is weighed as product, and that in the eleven charges just quoted against 1287 lb. delivered, there is 952 lb. received, which goes far towards neutralizing any disturbance in the estimate from this cause.

Mr. FOSTER gave me the particulars of 230,506 lb. of steel, (not 589,070 lb. as he mentions in his letter), but as the weight of the scrap received is not stated in my notes, I have preferred making use of the figures I was kindly allowed to extract from the books upon the occasion of my visit. Dealing with these 230,506 lb. in the same way as I did with the previous example, I make the waste on the sponge 26½ per cent.

Of course, the soundness of these calculations is wholly dependent on the correctness of the data obtained at Firminy. From Landore I have repeatedly heard the weight of steel received was equal to the pig and scrap employed, the iron in the ore supplying the waste. On the other hand, Mr. FOSTER gives the following statement as the result of this "pig and ore process."

Pig iron delivered, 1714 lb. ; scrap steel, 706 lb., together.... 2420 lb.
Ore (containing 60 per cent. of iron)... ..... 541 "
2961 lb.

But instead of the product being 2420 lb., (the weight of the pig and scrap employed), it is, according to his statement, 2240 lb.

I was not prepared for this after the analysis of the resulting slag brought away from Landore, but if Mr. FOSTER's figures are correct, my only alternative is the belief that there is an excessive waste there as well as at the works of the Blair Iron and Steel Company.

Mr. FOSTER, in his letter, alludes to the quality of the Landore steel. Now, in my address, I instituted no comparison between it and that of Mr. BLAIR's product, but I may state it was the adaptability of the latter to various purposes besides "rail," which led me to entertain a favorable opinion of "the future commercial merits of the scheme."

After my very cordial reception by Mr. BLAIR and his partners, I should be greatly grieved if anything I have inadvertently said, should have caused any disappointment to them. In making use of the words, "so far as I was able to learn, two parts of pig iron and one of sponge lost 20 per cent.," the last thing in my mind was any want of facility in obtaining all the information I asked for. The details in this letter bear ample proof of the frankness with which I was received upon the occasion of my examining the operation. What I wished to realize was the *probable* effect of melting pig iron alone and sponge, instead of using so large a proportion of scrap steel as that already indicated.

In some editorial remarks in the *American Manufacturer*, of May 27th and June 10th, some errors in my paper are spoken of, and in respect to which I am asked for an explanation. As an example, I have given the dimensions of the two Isabella furnaces as 75x20 feet, whereas one of them is 75x18 feet. Following this correction is a quotation in which I instance a Lancashire furnace running 700 tons a week against 600 at Isabella. I do not know why this is mentioned, but had my object been to exalt the works of England at the expense of those of America, I would have added that the Lancashire furnace from which the 700 tons were run is only 55x18 feet; what I meant was that in both cases this large make is obtained at a waste of fuel.

It is further alleged that I have overstated the consumption of fuel at these Pittsburgh works. The quantities used at the Isabella furnace, from February to September last year, will, I believe, give 27·49 cwt. of coke per ton of iron, including a good deal of forge quality. Single weeks' work for hard iron gave 26·53, and at the Lucy Works, the data I received gave 26·20 for forge and 30 to 32 cwt. for Bessemer iron. Am I then far wrong in naming 28 to 30 cwt., an average consumption of fuel in these furnaces for an average quality of iron ; or, if we at Middlesborough, from an ore yielding only 40 per cent., can make foundry iron with 23½ cwt. of coke, is it not fair to say that 5 cwt. is the price of hard driving at Pittsburgh in smelting forge iron from an ore producing 64 to 64½ per cent. of metal with even 26½ cwt. of coke ?

I had certainly no intention to be "sharp" on my friends in the Lehigh Valley; but if some of their own number, by building furnaces 72 feet high, and blowing with well-heated air, are getting a ton of iron with about 25 cwt. of anthracite, surely the others *are* "perhaps a little behind the age" in continuing the use of furnaces, 55 feet high, with blast incapable of melting zinc, and thus consuming 35 cwt. of the same description of fuel.

My remarks on the Siemens-Martin furnace, had, as the heading indicates, reference alone to the Siemens-Martin Steel process. Not being practically acquainted with the manufacture of pot steel, I have not presumed to offer any comment on the subject. I admit I must be wrong in saying "little or no steel" was made in the United States by the Siemens-Martin method, not having heard of all the works enumerated.

It would have been an easy matter for me to have written a much longer account than that criticized in the *American Manufacturer*, and have confined my observations to what I saw worthy of imitation in your country. I preferred adding to what I said under this head, my opinions on what I deemed less perfect in your system of working. These opinions may be fallacious, but they possess the merit of being candid and honest, and they are based on "information" sufficiently corroborated to induce me to believe it was not "defective." Let me add, I have too much respect for the persons before whom they were read, as well for the people about whom they were written, to have gone "carelessly" about my work I remain, yours, very faithfully,

MIDDLESBOROUGH, June 26, 1875. I. LOWTHIAN BELL.

Origin of Coal.

BY ANDREW ROY.

CONCLUDED FROM PAGE 31.

THE change to which these vegetable tissues have been subjected in their different stages has been carefully studied by chemists. The rationale of the process is thus described by BISCHOFF in his "Chemical Geology."

Wood.	*Loss*	*Peat.*
Carbon..... 49.1	21.50	27.6
Hydrogen 6.3	3.50	2.8
Oxygen..... 44.6	29.10	15.5
Wood.	*Loss.*	*Lignites.*
Carbon..... 49.1	18.65	30.45
Hydrogen..... 6.3	3.25	3.05
Oxygen..... 44.6	25.40	19.20
Lignite.		*Bituminous Coal.*
Carbon..... 30.45	12.35	18.10
Hydrogen 3.05	1.85	1.20
Oxygen... ... 19.20	16.50	2.70
Bituminous Coal.		*Anthracite.*
Carbon..... 18.10	3.75	14.35
Hydrogen 1.20	0.93	0.27
Oxygen..... 2.70	2.05	0.65

It is estimated that it would require from eight to ten feet of thickness of the loosely matted peaty tissue of the coal marshes to form one foot of coal ; and as some coal seams are thirty and forty feet thick in several of the coal fields of the world, an enormous bulk of vegetable matter must have accumulated for the production of these thick seams. The thickest peat bogs of the present day seldom exceed thirty or forty feet.

The coal marshes of the primeval world, on being opened up to serve the purposes of man, present distinct varieties of coal. The coals of the Carboniferous age, called true coals in contradistinction to the lignites or brown coals of more recent geological ages, are classed under the general heads of bituminous and anthracite. The bituminous coals are divided into different species, and show great diversity, both in their physical and chemical properties, and they are known by different names according to their qualities and chief properties, such as "dry-burning coals," "caking coals," "gas coals," "cannel coals," etc. Bituminous coals are of all shades of color, from deep black to greyish-black, and they exhibit in their structure some well marked peculiarities.

The dry-burning variety usually possesses a laminated structure, the fracture or cleavage of the coal being horizontal, and the seam is often intersected with partings or cutters, which cross each other every foot or two like latitude and longitude lines, giving the masses, as they come from the miner's pick, the appearance of squares, or blocks, hence they are called block coals. Such coals do not cake nor swell when burning, and for this reason they are especially adapted for smelting iron in a raw state. In the blast-furnace they retain their shape until they fall to ashes. They are generally very hard and compact and bear transportation better than any caking species of bituminous coals.

Caking coals melt and fuse together in the act of combustion. This property forbids their use in the furnace, as they form a hollow fire, and they require to be converted into coke before being applied to the reduction of ores. The slack or small coal is of nearly equal value, when in a pure state, with the round coal, the abundance of bituminous matter in the coal causing the whole to agglutinate in masses when exposed to a moderate heat, and converted into coke.

Cannel coal is nearly always formed in thin seams, and the deposits generally occupy but limited areas. It contains a large percentage of hydrogen and burns with a bright, clear flame, making a very pleasant parlor fire. Cannel is the richest gas coal obtainable, the gas possessing brighter illuminating powers than that of the more common varieties. It has a dull lustre and is in color between a violet and greyish-black ; it breaks with a flat, conchoidal fracture, and is very compact and fine in the grain. It will scarcely soil the fingers in handling it, and it makes very little dust in the mine. The remains of shells, fishes, and amphibious animals are very often found imbedded in the beds of cannel coal, whence it is thought that the carbonaceous matter from which it is derived was deposited in lagoons of open water in the condition of muck or mud, similar to the muck swamps of the present day.

The specific gravity of bituminous coals is from 1.25 to 1.4 ; they generally contain from 55 to 80 per cent. of carbon, and from 8 to 22 per cent. of oxygen, hydrogen and nitrogen, with variable proportions of earthy matter.

Anthracite is a black, heavy coal, having a conchoidal fracture, and containing from 80 to 95 per cent. of carbon and a small per cent. of hydrogen, oxygen and nitrogen. This coal kindles with difficulty, but when once fairly ignited, it burns with an intense heat, emitting neither smoke nor flame. It occupies much less extensive areas than the bituminous species.

Anthracite coal was originally bituminous, the change having been effected through the agency of heat, which drove off the bituminous matter, as the gases are now driven off from bituminous coal in the production of common street gas.

The anthracite coal fields of Pennsylvania form part of the great Allegheny coal field. During the upheaval of the Allegheny Mountains, which occurred after the close of the Carboniferous age, the heat which attended the elevation of the mountains acted on the coal and drove out the gaseous matters. Anthracite exists in South Wales, and in France, Russia, and Saxony ; and everywhere it is found occupying abrupt flexures of the strata, the result of gradual and irresistible forces. So abrupt are these flexures in the anthracite region of Pennsylvania, that the coal strata are found occupying in many places nearly perpendicular positions, and in some cases reverse dips. The specific gravity of anthracite is from 1·3 to 1·75.

Semi-bituminous coal is, as its name implies, intermediate between bituminous and anthracite. It contains little bituminous matter, and a large percentage of carbon, and is highly prized for the generation of steam and the manufacture of iron. This coal burns freely, producing an intense heat when exposed to the action of a strong blast. Like anthracite, semi-bituminous coal has been subjected to the action of heat, though in a less degree, during the folding of the strata. The coal is less debituminized, because, during the metamorphic process, the gaseous materials had not the same opportunity to escape, as the strata, though folded, are nowhere fractured.

The lignites, or brown coals, belong to geological formations of more recent

age than the true coals of the Carboniferous period. They exhibit in their structure plain and unmistakable traces of their vegetable origin. These coals burn with a clear flame, but give off a highly bituminous smell. They decompose very rapidly when exposed to the action of the atmosphere, and for this reason are unfitted for distant transportation. The coals of China, and of our Pacific Coast, belong to this class, and they exist over large areas on the Continent of Europe. Some of the better sorts approach the true coals in character.

The coal fields of the world generally exist in the shape of elliptical basins. Some of the basins are nearly round, but in most cases they possess much greater length than breadth. The greatest thickness of strata, and, consequently, the greatest number of beds of a field, exist at the center or trough. From this point the strata are indented in all directions, the upper coals cropping out first, and the lower ones stretching across the whole surface of the original coal marsh. The original shape of many fields has been greatly changed by faults in the form of dislocations of the strata. These faults traverse the coal field for miles, and are the result of violent mechanical convulsions by which the strata in one part of a field are thrown up on one side of the dislocation. The change of level caused by such faults ranges from a few inches to hundreds of feet; and it frequently happens in the operation of sinking for coal, that a seam is reached by a shaft at a depth of 300 feet, while on the opposite side of the fault, the same seam is found a thousand or twelve hundred feet deep.

These dislocations are very common in the British coal fields. They sometimes divide the basin into subordinate basins, presenting great barriers to the successful prosecution of underground operations. But they come as friends as well as enemies, for they are true flood-gates damming back the waters. The line of direction of these dikes is not always the same, and they sometimes cross each other.

The change of level caused by a dike in one of the Scottish coal fields is stated by Mr. ROBERT BALL, the eminent coal viewer of Scotland, to be no less than 1,230 feet, and the coal field is divided by this and another slip on the north side of the basin into three subordinate basins. The great dislocation throws out the whole of the coal strata for nearly a mile, when, by reason of the natural inclination of the rocks, the missing materials again appear as the outcrop of one of the subordinate fields.

Another dike in Lanarkshire causes a change of level of the coal rocks of the enormous distance of 2,700 feet.

The change of level caused by one of these dikes is upward or downward, according to the side from which they are approached by the miner.

When forming an acute angle with the floor of the mine the coal strata are thrown down, and when the angle is obtuse they are thrown up. Sometimes, however, the face of the dike is perfectly vertical, forming a right angle with the pavement, in which case it is very difficult to determine whether it is an upthrow or downthrow. These dikes are not always upthrows or downthrows, for the strata are sometimes only pierced by them without dislocation. In these examples they are known as trap-dikes, the intrusive matter being the lava which flowed in during the rents of the strata. In approaching these faults the coal is frequently found burnt like coke.

Besides dikes of the character noticed above, there are a number of other faults encountered in mining which are known by various names such as "troubles," "horsebacks," "nips," "clay-veins," "wants," etc. Troubles are generally meant to denote irregularities in the coal, as where a seam has an irregular floor, and is subject to sudden thinning, or where part of the coal is so soft as to resemble the gob waste of the mine. Horseback is an Americanism, and is now very generally applied to every trouble of the mine, though originally meant to designate a fault in the floor of the coal, which resembles the shape of a horse's back. Sometimes irregular layers of sandstone or shale appear in the body of the coal; and it also frequently happens that a foreign mass of sandstone will be found usurping the place of the coal. This latter fault is very common in some mines, and is, doubtless, due to currents of water in rapid motion having carried sand across the old coal bog, which, by constant friction, has removed the coal, and finally settled down in its place.

In the coal fields of the United States, although there are an abundance of faults of a local character, there is seldom met any slip dike; and such dislocations of the strata, wherever encountered, seldom exceed a few feet of upthrow or down-throw, though in the coal strata of North Carolina, which are subject to many troubles, some of the dikes are known to cause twenty or thirty feet of change of level.

Virginia City, Nev., Water Works.

THE Virginia City *Enterprise* boasts that that city has the best and purest mountain water in the world, which has been introduced in spite of great natural obstacles, it being necessary to cross the Washoe Valley. The supply is derived from Dall's Creek, up in the Sierras, near Lake Tahoe, brought in an eighteen-inch flume four miles long to a spur on the opposite side of the Washoe Valley, at a point which is 2,100 feet above the track of the Virginia and Truckee Railroad. Thence it flows easily along the crest and crosses the valley at the Lake View toll gate. It is in conducting the water across the valley that the great triumph of the Water Company has been achieved. At the spur above mentioned the water is received into an iron pipe and conducted along the crest. The pipe then makes the descent into the valley, crosses it, ascends the opposite side, and conducts the water to the height of 1,540 feet above the railroad at Lake View, where it is again taken up. The total length of the inverted syphon is 400 feet less then seven miles. The inlet is elevated above the outlet about 400 feet. The supply in this way introduced is equal to two million gallons per day. By using the full head this quantity can be largely increased. The leading of such a stream of water across so deep a valley is declared to have no parallel in the history of hydraulic engineering. The pressure on the pipe is enormous, and has been estimated at that of a column of water 1,720 feet in height. The pipe has an orifice twelve inches in diameter. At the point where the pressure is greatest it is five-sixteenths of an inch in thickness, and riveted together with five-eighth inch pipe rivets in a double row. As the pressure grows less the thickness of the material is decreased gradually till it reaches one-sixteenth of an inch. The amount of rolled iron used in the construction of the pipe was 1,150,000 pounds. A million rivets were also consumed. It took 50,000 pounds of lead to lay the pipes. Before being used, each length of pipe was heated to the temperature of 380 degrees, and submerged in a bath of asphaltum and coal tar, which has the effect of preventing it from corroding. The line of pipe is compelled to twist and curve to fit the inequalities of the ground, and crosses thirteen steep canyons. At the bottom of each depression there is a blow-off cock, for the purpose of removing any sediment which might accumulate. At each elevation is an air cock also. The water when received into the pipe from the aqueduct, passes through wire screens and charcoal, so that it is completely purified and ready for use.

Economy in the Use of Fuel.

IN a paper on economy in the use of coal, lately read before the Royal School of Mines, Berlin, we find the synopsis of interesting historic facts: The progress in the economical consumption of fuel in the last 50 years has been enormous, and has been effected in great part by metallurgists; and here again we find the scientific men taking the lead. In the economical application of the heat developed by fuel, the Bessemer process is enormously effective, not more than 10 lb. of coal being requisite for the production of 1 cwt. of steel from pig iron by this method, while in the older process, still in use for fine qualities of steel, 250 lb. are needed. SIEMENS, by making the heat which would escape through the chimney of an ordinary furnace warm the fuel and the air necessary to combustion, obtains an economy of two-thirds the weight of fuel. It was FABER DE FAURE, an accomplished Bavarian metallurgist, who first made practical use of the gases which formerly escaped in immense quantities from the tops of blast furnaces, and the enormous blast engines, the hoisting engines, pumps, and hot-blast stoves, even the roasting kilns of such establishments now-a-days require no fuel except this long-neglected waste product. BISCHOF, another German engineer and metallurgical author, was the first to produce gas artificially for smelting purposes, and this was certainly one of the greatest advances ever made in our art. By first turning it into gas, fuel can be much more perfectly consumed than in the solid form, and hence can be made to give us, as in the Siemens furnace, in which only gas is used, a much higher temperature than is practically attained by the combustion of coal in the ordinary way; but perhaps the greatest advantage of gas is that substances in general scarcely regarded as fuel at all can be employed for the production of gas with the most brilliant results, a matter of the greatest importance, especially in a region destitute of true coal, like California. LUNDIN, a noted and thoroughly educated Swedish metallurgist, has taught us how to produce gas from wet sawdust, entirely without preparation, of such power that wrought iron may be melted with it, and the great difficulty is to find any material infusible enough to answer as a lining in the furnace where it is consumed. Some idea of the importance of these improvements will be had from the fact that the economy in fuel effected in England alone, in the year 1872, as compared with 1871, by the progress made in the introduction of more perfect apparatus, represented more than 4,000,000 tons of coal.

Practical Notes on the Management of Gas Works.

THE following notes have been compiled by W. C. HOLMES & Co., Engineers and Contractors of Gas Works, Huddersfield, England, and though doubtless many of the methods in use in the English works would not be adapted to ours, yet a large amount of useful information will be found in the extracts we make. We will be pleased to hear from our managers of gas works as to the way they do these things, and wherein our ways are improvements on the English. Our extracts will run through several numbers of the ENGINEERING AND MINING JOURNAL.

CHOICE OF COAL.

The choice of coal for the production of gas depends, in a great measure, on circumstances—as locality and economy. Where economy is the primary object, the coals most easily and cheaply obtained should be tried, and the best, or the one yielding the largest quantity of gas per ton, combined with the best quality of both gas and coke, should be then used. Where economy is a secondary object, cannel coal produces the richest and most brilliant gas; it is an improvement, however, to mix a certain proportion, say 50 per cent., of good common gas coal with it, in order to produce a more permanent quality of gas, as the greater the amount of olefiant gas which it contains, the greater the proportion to which it is affected by temperature, and by contact with water.

ABSORPTION OF GAS BY CONTACT WITH WATER.

It has been found by Dr. TORREY, that one volume of water absorbs of

	At 32° Fahr.	At 59° Fahr.	At 68° Fahr.
Hydrogen	0·01930	0·01930	0·01930
Carbonic Oxide	0·02287	0·02432	0·02312
Light Carburetted Hydrogen.	0·05449	0·03909	0·03499
Olefiant Gas	0·25630	0·16150	0·01488

From which it appears that water, at 59° Fahr., absorbs—

8·37 times more olefiant gas than hydrogen
6·64 times ditto ditto carbonic oxide
4·13 times ditto ditto light carburetted hydrogen

and at lower temperatures the absorption is greater in proportion; an increase of pressure has, also, the same effect.

In addition to this, the coke produced from a mixture of cannel and common coal, is more valuable or useful according to the proportions; the coke from cannel coal being of little or no value as fuel. The greater also the amount of volatile matter contained in the coal, the higher must be the heat of the retorts for its conversion into gas.

AMOUNT OF SULPHUR IN THE VOLATILE MATTER.

To the gas manufacturer this is a question of great importance; for, although it frequently happens that the sulphur exists in coal as bisulphuret of iron, in which case it is equally divided between the fixed and volatile matters, yet there are some coals in which nearly the whole of the sulphur is expelled, and goes away with the gaseous products. This is precisely one of the questions which practical men should, therefore, invariably determine, as it will not unfrequently enable them to account for much seeming mystery and inequality in the action of the purifiers.

PRESENCE OF LIME IN COAL.

In some of the bituminous coals, an appreciable quantity of carbonate of lime is found spreading itself in thin layers between the fissures of the coal; this substance has a remarkable effect in retaining the sulphur of the coal in the coke. It may, indeed, be looked upon as lime, and in this respect produces all the good effects which that substance is capable of performing in a purifier. This carbonate of lime, by the action of the impure coal gas, resolves itself into sulphuret of calcium, whilst its carbonic acid most probably becomes carbonic oxide. To the coke-maker, therefore, the presence of carbonate of lime in coal should be an objection, but the contrary as regards the gas-maker.

OXYGEN, ETC., IN COAL.

It must not be assumed that the quantity of volatile matter contained in the coal represents the amount capable of conversion into illuminating gas, as due allowance must be made for the oxygen, which passes off, in part combined with hydrogen forming water, and with carbon, forming carbonic acid and carbonic oxide gases—thus, in addition to reducing the amount of volatile matter,

acting injuriously by neutralizing or destroying part of the really valuable gas-producing elements of the coal. The amount of water yielded by various coals ranges from 10 to 30 gallons per ton of coal, and, therefore, whilst one coal may give a larger percentage of volatile matter than another, the former may be inferior to the latter in illuminating ingredients.

EFFECTS OF MOISTURE ON THE COAL.

It is almost needless to say that the coal should be dry before being used, and that it should be stacked under cover. When a quantity of moist coal is thrown into a retort, the outer surface, after undergoing for some time the action of the fire, is converted into coke, and the bisulphuret of iron into protosulphuret of iron, over which latter the steam from the interior of the mass of coal passes, with, of course, the same result as if this protosulphuret of iron were purposely subjected, at a red heat, to the action of the vapor of water; that is to say, the two compounds mutually decompose each other, and give rise to oxide of iron and sulphuretted hydrogen, so that by mismanagement of this kind, the whole of the sulphur contained in bituminous coals may be made to pass off into the gas, and thus double the labor and expense of purification.

RULE FOR ASCERTAINING THE WEIGHT OF GAS.

The rule to find the weight of a given volume of gas in pounds avoirdupois, when the specific gravity is known, is as follows:—Multiply the volume by the specific gravity, in order to find the number of cubic feet of air equal in weight to the volume of the gas. Then, as a cubic foot of air weighs 536 grains, of which there are 7,000 in the pound avoirdupois, multiply by 536 and divide by 7,000, or, what is the same, multiply by ·0766.

For example, take the English caking coals the volume being 8,000 cubic feet, and the specific gravity ·420—

Then $8000 \times \cdot 420 = 3360$ cubic feet of air

And $\frac{3360 \times 536}{7000} = 257$ lb. avoirdupois, the weight of gas from 1 ton of coal.

BULK FOR STORAGE.

For storage, the economic bulk of coal is 44 cubic feet to the ton, and that of coke 80 cubic feet to the ton.

CARBONIZATION.

PREPARATION OF RETORTS FOR CHARGING.

After the retorts have been set, the brick work should be well, but slowly and thoroughly, dried for several days by means of a low fire; when sufficiently dried, the firing should be increased until the bodies of the retorts have become heated to a cherry red for iron, or bright orange color for clay retorts; whilst firing, a door soould be loosely put on each mouthpiece, in order to keep out the external air.

PROPER HEAT FOR RETORTS.

The following table gives the colors corresponding with various temperatures, according to FAHRENHEIT's scale:—

Faint red	960°	Dull orange	†2010°
Dull red	1290°	Bright orange	†2190°
Brilliant r'd (color of r'd oxide of lead)	1470°	White heat	†2370°
Cherry red	*1650°	Bright white do	2550°
Bright cherry red	*1830°	Brilliant white do	2730°
		Melting point of cast iron	2786°

* Heats suitable for iron retorts. † Heats suitable for clay retorts.

The retorts should not be charged until they have fully attained the proper heat, or a large proportion of tar will be produced, and the gas will be proportionately diminished in quantity, and will also be of inferior quality. The proper degree of heat necessary for the carbonization of the charges will depend considerably upon the description of coal used, and the amount of volatile matter which it contains. Coal containing above 30 per cent., according to the best authorities, requires a higher heat for its distillation than that which contains it in a lesser degree.

Careful attention and practical experiment will give the manager the heat best suited to the kind of coal used, and enable him to conduct his operations accordingly. Too great a degree of heat must be guarded against as well as one too low, as, if the retorts are too hot, part of the most valuable illuminating components of the gas will be deposited on their interior surfaces in the form of carbon.

DAMPERS.

In maintaining the heat required, much may be done by a judicious use of the dampers; when the retorts are sufficiently hot, the dampers should be partially closed, in order to retain the heat; when they are being cooled down, the dampers should be closed by degrees, and the fires reduced gradually—great care is necessary in this particular, in order to avoid injury to the retorts, especially where clay or brick ones are used.

DURABILITY OF THE RETORTS.

To ensure the greatest amount of durability of the retorts, it is essential that they should be kept at a uniform heat, as far as possible, and in constant action day and night, or, at least, never allowed to go below a dull red heat visible by daylight. The first portion of oxide which forms on the surface, when allowed to cool, cracks and falls off, leaving a new surface to be acted upon the next time it is heated; by thus being alternately heated and cooled they are rapidly destroyed. In small apparatus, and more especially in the summer months, the alternate heating and cooling down of the retorts is unavoidable, but a great deal depends upon the carefulness of the workmen.

A very hot oxidizing flame, mixed with an excess of unconsumed air, is unnecessary for the evolution of gas, and deleterious on account of its rapid destruction of the retorts; everything, therefore, depends on a uniformly steady fire. Besides the combustion caused by the hot air of the fire, the sulphur of the coal converts the surface into sulphide of iron, which melts off; and the deposit of carbon in the interior is also of considerable importance, on account of its being a non-conductor of heat. Carbon, sulphur, and the oxygen of the air are, therefore, conjointly destructive to the retorts. The retorts suffer most from the air which enters at the furnace door when stoking, and, therefore, care must be exercised to avoid this as much as possible.

IRON, CLAY, AND BRICK RETORTS.

With regard to the comparative merits of iron, clay, and brick retorts, a great diversity of opinion exists amongst gas engineers The durability of brick retorts is the greatest, that of clay ones the next, and of iron ones the least. The "life" of an iron retort is usually calculated as equal to the production of 700,000 cubic feet of gas, and of clay retorts to that of 1,800,000 cubic feet.

WEAR AND TEAR OF RETORTS.

The usual calculation for the wear and tear of retorts is: for iron, 2½d.; clay, 1½d.; and for brick retorts, ¼d. per 1,000 cubic feet of gas produced. So far the advantage is on the side of clay and brick retorts.

PROPORTION OF FUEL USED.

On the other hand, the quantity of fuel used usually averages 50 per cent. for brick retorts, 33 per cent for clay ones, and 25 per cent. for iron retorts, of the quantity of coke produced. These remarks must be taken as applying only to works on a large scale.

LEAKAGE OF CLAY AND BRICK RETORTS.

Brick and clay retorts also, being porous, leak to a considerable extent for some time after starting, and are, therefore, not so well suited for small works, where they are required to be frequently heated and cooled down; though, in some cases, brick and iron, or clay and iron retorts may be associated together, in the same retort-house, the brick and clay retorts being kept in constant work, and the iron ones supplying the variations of the demand. Where a number of clay or brick retorts are fixed, the use of an exhauster is almost indispensable. The heating and cooling down of clay and brick retorts must be done with much greater care than when iron ones are used, as they are much more liable to injury in these operations.

CLOSING THE ASHPIT.

When the retorts have to be left for the night, the ashpit door should be closed, or, in cases where there are no doors, the ashes should be piled round to prevent the admission of air as much as possible.

FIRING.

When the retorts are at a good and proper working heat, the temperature should be kept by the application of small quantities of fuel at intervals. A considerable saving of fuel may be effected by attending carefully to the fires; the fire-bars must be kept free from clinkers, the evaporating pans clear of ashes and filled with water from time to time, and the flues and outer surface of the retorts free from dust and ashes. Too much draft into the retort-house should also be avoided, on account of its cooling effect on the retorts.

REMOVAL OF CARBON FROM RETORTS.

When carbon has accumulated to some extent in the interior of the retorts, it should be removed; the doors should be left off for some hours for the admission of atmospheric air whilst the retorts are hot, and the deposits then removed by means of an iron bar flattened and pointed at the end.

ECONOMY OF FUEL.

Too much care cannot be taken to economise fuel, especially in small works, as on this depends, in a great measure, much of the success or otherwise of the undertaking, commercially. As a rule, works producing half a million cubic feet of gas per annum will require the whole of the coke made as fuel, the surplus of winter being required for the summer months. Owing to mismanagement, however, it is frequently the case that this has to be supplemented either by coal or coke procured from other works. Where the production amounts to from two to three millions of cubic feet per annum, and with iron, or iron and clay retorts, the fuel used throughout the year should not exceed 50 per cent. of the coke made.

USING RED HOT COKE FOR FUEL.

Using coke for fuel whilst red hot, and as it has been drawn from the retorts, effects a saving of about 10 per cent.; it is, however, superfluous to say, that this plan can only be carried out in large works.

TO BE CONTINUED.

Notes.

Coal Fields of Spain.—M GRAND, in describing the coal fields of Spain to the Paris Society of Engineers, estimated their area at 150,000 hectares (the hectare being about 1·47 acre,) from which only 500,000 or 600,000 tons are annually extracted, while Belgium, with the same area, yields 10,000,000 tons. The Spanish coal fields are situated in Castille, Leon, and the Asturias. The processes are described as being very rough and imperfect. M. DELESSE stated that the coal of the Asturias was chiefly used for gas making.

Rising Fawn Furnace, situated in Wills Valley, North Georgia, is 60 feet high, 16 feet in the bosh, 12 feet in the throat, 6 feet 6 inches in the hearth, and 73 deg. angle of bosh. The stack is of sheet iron, double riveted on vertical butts. The lining is fire-brick made from the Jersey clays, and was dried by twelve weeks' fire previous to filling. The blowing engine is of the usual vertical type, and was constructed in Philadelphia. The hot blasts are the regenerative "WHITWELL" ovens, three in number, and with their dimensions as follows, viz.: Height, 30 feet; diameter, 18 feet; heating surface, 8,000 superficial feet in each. The cast house is 100 feet by 50 feet, and 25 feet high on the side walls; whilst the materials are dumped from the cars (running on an elevated trestle) directly into the stockhouse, 175 feet long and 50 feet wide. The stock passes over a weigh scale in a direct-acting elevator on the OTIS principle. The bell is worked by a THOMAS pneumatic cylinder. The iron work was furnished for the furnace by H. G. MORRIS, of Philadelphia, and the bricks by P. NEUKUMET, of the same place.

The Sulphur Beds of the Island of Saba.—We have received an interesting description, by Professor GESNER, of a visit made by him to the sulphur-beds of the Island of Saba. He says—"Our destination was Spring Bay, where the beds of sulphur-bearing gypsum show their greatest outcrop, and Great Hole, which adjoins it. The men were engaged in removing the overburden, some eight feet of sand and gravel, when we arrived, and in breaking down the crude brimstone from the face of the bed, which is 40 feet in thickness at this point, and extends into the hill under the volcanic cap for an indefinite distance. Going towards Flat Point, which lies between Great Hole and Spring Bay, and descending the cliff a little, one can obtain a view of the face of the vast bed of brimstone, which shows the yellow features in all the places when the overburden has been removed, and in weather-worn places stands out distinctly. At one place a fissure nearly 2 feet in width, lined with yellow crystals so far as we could see was sounded with a line for 40 feet. The mass of the bed is gypsum, bearing sulphur to a greater or less degree, 60 per cent being the average of sulphur. In many places masses of sulphur, quite pure and resembling melted brimstone poured into irregular moulds, could be had, hundreds of pounds in weight. The fires died out in Saba so long ago that the sulphur-beds are perfectly cold, and no gases arise to interrupt the working of the sulphur quarry, the workmen carrying on their operations as easily as if in a bank of stiff clay. We trace the bed to Flat Point, and agree as to what Spring Bay will show when its outcrops have been exploded with pick and shovel. We discuss the shipping facilities, and agree that a wire tramway from the edge of the quarry to Green Key will be the way to do the transportation to the lighters. I have seen what I believe to be one of the largest, and certainly the richest and most accessible, deposits of brimstone in the world." Mr. G. G. BLACKWELL sends us the following:—

Analysis of Saba Sulphur.

	No. 1.	No. 2.
Sulphur	80·57	75·81
Silicate and sulphate of lime	14 90	20·56
Water	4·53	4·53
	100.00	100.00

Notes.

Alabama Coal.—Messrs. T. H. ALDRICH & Co., of the Montevallo Coal Mines, Alabama, have just shipped to Pensacola thirty-six cars of their celebrated coal for the United States steamers *Kansas* and *Canandaigua* ordered to that port to coal. This shipment was placed in Pensacola in forty-eight hours after the receipt of the order the mines.

The Redbank Oil-Well a Failure.—The test well on the Brinker farm, near New Bethlehem, has turned out a dry hole It was drilled to a depth of 1450 feet. At first the indications were hopeful, but no third sand having been found, it became evident that the well had not been properly located. The company has not entirely abandoned the search for oil, as it is their intention to test the territory thoroughly —*Clarion Democrat.*

Breaker Boys' Enemy.—The new patent jiggers for separating slate from the coal are making rapid inroads upon the collieries of this region, and just as rapidly depriving the industrious little breaker boys (slate pickers) of their occupation. We learn that over a hundred slate pickers in Shenandoah alone found no work for them when the late resumption took place, on account of the introduction of this new machine. Messrs. LAWRENCE, MERKEL & Co., are putting three of these jiggers into their colliery at Mahanoy Plane. The machines do their work well, and will prove a great saving to the operators of collieries.—*Schuylkill Republican.*

Spanish and Algerian Iron Ores.—The best kinds of iron ore from the Center of Spain, which serve for making pig iron, to the North of Bilbao and the South of Carthagena, contain about 59 per cent. of iron and 30 per cent. of manganese; a considerable proportion of sulphur, or phosphorus, is found in all the ores without exception. Their price at the Spanish ports is 25c. (2½d.) for the percentage of iron, and 75c (7½d.) for the percentage of manganese. The Algerian ores contain from 48 per cent. to 65 per cent. of iron, and 0 2 to 0·8, and at the maximum, 12, per cent. of manganese; they show no trace of sulphur or phosphorus. The cost price is 8f. per 1,000 kilogrammes (6s. 6d. per ton,) free on board; the selling price varies from 11f. to 13f. per 1,000 kilogrammes (8s. 9, to 10s. 6d.) per ton.

The Borax Lake of California.—It appears that the incredulity with which statements concerning the Borax Lake have been received in England has been considerably lessened by supplies of the material coming to the London market. The pottery districts are especially interested in the discovery. Accounts set forth that very extensive works are now nearly completed for the refining and purifying of this borax for shipment. Stimulated by the action of the railroad company, the Borax Company has put up large works, and will soon be prepared to turn out from 20 to 50 tons of pure borax per day. The deposit of borax extends over an area of 18 miles in length by 6 to 8 miles in width, covered with crude borax from 3 to 5 feet thick. The crude material will average from 20 to 40 per cent.

Prices of Coal at Kiel, Germany.—In reply to an invitation from the German Government for tenders for the delivery of 12 000 tons machine coal, free on the quay at Kiel harbor, the following offers have been submitted:

	s.	d.		s.	d.	
Newcastle and Durham	22	0	to	27	0	per ton.
Scotch	17	6	to	25	0	"
Welsh:						
Nixon's	28	0	to	31	0	"
Powell's, Duffryn, Rhymney, &c	24	0	to	29	0	"
Westphalian:						
(Screened coal)	23	0	to	23	6	"

Waking up the British Iron Masters.—A correspondent writing the *Colliery Guardian* from Wolverhampton, under date of June 4th, says: "Samples of American iron have this week been shown in Wolverhampton, produced by Danks' puddling machine and the quality of the iron and the comparatively low price at which it is sold, have excited not a little surprise. The whole question of mechanical puddling has been once again revived by this circumstance, and leading South Staffordshire ironmasters affirm that it will be necessary, if the district is to hold its own against rivals, not only to have the puddling of iron done by machine, but also to apply the blast to the puddling furnace, by which means it is said slack, instead of coal, can be used equally well for the process, at an obvious great saving in the cost of fuel."

Mineral Statistics of Victoria.—The reports of the mining surveyors and registrars for the quarter ending December, 1874, for which we are, as usual, indebted to the Secretary for Mines, Mr. R. BROUGH SMYTH, shows that there were 45,151 miners employed, of which number 18,622 Europeans and 12,056 Chinese were employed in alluvial mining, and 14,349 Europeans and 124 Chinese in quartz mining. The approximate value of the mining plant in use was 2,078,936*l*. There are 17 boring machines in operation, Ararat being the only district in which no rock-drill is at work. There are 1,063 square miles of auriferous ground actually worked on, and 3,398 distinct reefs have proved to be auriferous. The total quantities of gold got during the quarter were 112,287 ozs. 8 dwts. from alluviums, and 171,621 ozs. 16 dwts. from quartz, making together 283,909 ozs. 2 dwts. From 244,367 tons of quartz 149,949 ozs. of gold were obtained, or at the rate of 12 dwts 6½ grs. per ton. From 11,244 tons of quartz tailings and mullock there were obtained 1,033½ ozs. of gold, or at the rate of 1 dwt. 20.11 grs. per ton. From 1,619 tons of pyrites and blanke ings 5 387½ ozs. of gold were obtained, or at the rate of 3 ozs. 6 dwts. 13.19 grs. per ton. With regard to wash-dirt and cement, it appears that during the quarter 14,297½ ozs. of gold were obtained from 434,737¾ tons of wash-dirt, being at the rate of 15¾ grs. per ton. From 11,240 tons of cement 3,442 ozs. of gold were obtained, the rate being 6 dwts. 3 grs. per ton.

STATISTICS OF COAL PRODUCTION

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending July 10:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co.	48,161	1,630,520	26,471	1,296,783
D. L. and W. RR. Co.	68,226	1,753,041	32,366	1,344,723
Penn. Coal Co	24,931	609,410	24,001	642,253
L. V. RR. Co.	20,860	427,686	16,056	527,490
P. and N. Y. RR. Co	2,338	59,052	622	34,248
C. RR. of N. J.	49,486	330,441	25 426	737,113
Penn. Canal	..	..	..	..
Lack. and B. RR.	..	63,596	..	97,019
	204,602	4,953,746	124,942	4,679,229
Lehigh Region.				
L. V. RR. Co	31,096	248 169	53,407	1,634,083
C. RR. of N. J.	13,436	32,216	17 472	533,914
D. H. and W. B. RR.	549	33,125	1,173	14,182
	45,081	313,5 0	72,052	2,182,179
Schuylkill Region.				
P. and R. R. RR. Co.	136,334	1,001,212	9,467	2,426,736
Shamokin and Lykens Val.	25 94	574,451	21,623	420,011
	162,028	1,575,660	31,090	2,846,747
Sullivan Region.				
Sul. and Erie RR. Co.	..	5 557	1,456	17,380
Total	411,711	6,848,478	229,510	9,725,537
Increase	182,171	..	..	..
Decrease		2,877,056	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending July 10, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb	52,890	1,222,543
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	6,350	147,811
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	2.366	113,444
*East Broad Top	1,002	24,363
Clearfield Region, Pa.		
*Snow Shoe	860	37 369
*Tyrone and Clearfield	15.507	425,784
Allegheny Region, Pa.		
*Pennsylvania RR	2,491	127,635
Pittsburgh Region, Pa.		
*West Penn. RR	3,341	110,128
*Southwest Penn. RR	126	4,577
*Penn. & Westmoreland gas coal, Pa. RR.	15,232	269,526
*Pennsylvania RR	7,024	197,897
Kanawha Region, W. Va.		
Chesapeake and Ohio RR	4,698	85,023

* To July 7.

The Production of Coke for the week ending July 7.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR.	604	26,755
Southwest Penn. RR.	8.700	268,523
Penn. & Westmoreland Region, Penn. RR.	363	14,208
Pittsburgh, Penn. RR.	1,440	51,816

Production of Bituminous Coal. 1875.

Tons of 2000 lb.	Previous.	May.	Total,
Blossburgh Region	10 ,350	54,338	154.688
Barclay Region	102,986	20,770	123 756
McIntyre Coal Co.	22 909	13,415	36,324
Broad-Top Region	63,459	24,062	87,521
Cumberland Region	565,923	288,968	854,891
East Broad Top	13,272	6,319	19,591
Snow Shoe	27,708	5,988	33,696
Clearfield Region	260,482	50,447	310,929
Alleghany Region	72 596	35,022	107,618
Pittsburgh Region.			
West Penn. RR.	66,298	20,771	87,069
Southwest Penn. RR.	2,447	1,454	3,901
Gas Coal, Penn. RR.	154,786	21,340	176,126
Pittsburgh Coal, Penn. RR.	99,960	47, 26	146,986
Saw Mill Run RR.	24,279	6,057	30,336
Cleveland and Pittsburgh RR.	106,755	35,854	142 609
Pittsburgh, Cincinnati and St. Louis RR., in Penn.	180.207	44,065	224,272
do. in Ohio	56,070	14,986	71,056
Erie and Pittsburgh RR.	28,025	9,564	38,189
Pittsburgh, Fort Wayne and Chicago RR., in Penn.	44,888	9,225	54,113
do. in Ohio	29,928	6,045	35 973
Pittsb'g. & Castle Shannon RR.	29,003	5,327	34,330
A. Y. & P. RR.	1,276	890	2,166
Pittsb'g and Connellsville RR.	124,247	..	124 247
Monongahela Nav. Co.	..	..	..
Keeling & Co.	26,896	..	26,896
Wettengell & Gormley	6,797	..	6 797
J. W. Carlin & Co..	..	.	..
Pittsburgh Va. & C. RR	12.204	2,447	14,651
Allegheny Valley RR.	92,681	..	92,681
Gray & Bell	3,461	..	3,461
St Louis Region.			
St. Louis A. and T. H. RR. and Branches	95,064	..	95,064
Illinois and St. Louis	.	..	..
Indiana North and South RR.	264	..	264
Evansville & Crawfordsville RR	9 529	1,284	10,813
Ohio and Mississippi RR	39,696		39,696
Sewanee Region.			
Tenn. Coal and RR. Co.	27,085	5,186	32,271
Kanawha Region.			
Chesapeake and Ohio RR.	43,987	..	43,987
Warrior Region, Ala.			
South and North Alabama RR.	13,719	2,070	15,789
Cahaba Region, Ala.			
South and North Alabama RR.	5.150	340	5,490
S. R. and D. RR	3,471	1,418	4.889
Chicago B. and Q. RR.	142,463	21,350	163,813
B. and M. R. RR.	28,852	4,030	32,882
Union Pacific RR.	61,369	..	61,369
Keokuk and Des Moines RR.	..	..	..
Denver and Rio Grande	8,678	1 914	10.592
Cairo and St, Louis	3,106	..	3,106
	2,802,926	761,977	3 564,903

The Exports of Coal from Baltimore for the week were 000 tons, and for the year, 28,029 tons as compared with 55,722 tons to the corresponding time in 1874.

The receipts at Buffalo, via L. S. and M. S. RR. for the week were 2,750 tons. The exports by Lake were 11,592 tons, and imports 2,860 tons.

The receipts at Port Richmond for the week were 60,000 tons, shipments 50,000 tons, and balance on hand 40,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 28,084 tons.

Receipts at Greenwich, Philadelphia:

	Bituminous.	Gas Coals.
Receipts	6,382	4,390
Shipments	6,629	6,077
On hand	4,229	1,890

Belvidere Delaware RR. report:

	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	2,491	2,698	142,015
" " " South Amboy	3,081	24,439	361,508
Shipments of Coal Port (Trenton)	..	196	140,683
" South Amboy	664	99 576	329,830

Shipments from Pictou, N. S, for the week ending July 3:

	Tons. Week.	Year.
To United States	1615	6370
" West Indies	—	—
" South America	—	1002
" Canada	7358	29068
" Other Provinces	1658	13660
	10,631	50100

Shipments from the Block House, Cow Bay, C. B., to the following destinations, for the week ending July 1:

	Week.	Year.
Provinces	505	3115
West Indies	..	806
United Stated	1054	1054
	1559	4975

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, July 16, 1875.

Anthracite.

A great pressure continues for the hard coals of the Schuylkill and Lehigh Regions. The Lehigh and Wilkes-Barre Coal Company are shipping very actively, having vessels engaged for a very large tonnage. The softer coals of the Schuylkill Region are somewhat quiet, while Lackawanna coals are very dull. It is stated that there is quite an accumulation of the latter coals, especially at Hoboken. The Schuylkill and Lehigh mines are fully at work, but are not producing at a rate to suit the companies. It takes a long time to reorganize after so long a strike, and it is quite probable that the first month's wages of the miners will not be up to the average. The price circulars for August will not be issued until the 20th inst., but we are informed, by good authority, that the Combination Companies will make an advance of 10c. per ton only on Egg. Stove and Chestnut sizes, while the Pennsylvania Company will continue July prices. The object in continuing July prices for August on the larger sizes is said to be to encourage the manufacturing interests, and not give the Cumberland coals the field to themselves. The latter is undoubtedly the most important reason.

The production of Anthracite coal last week was 411,711 tons, as compared with 476,915 tons the week previous; showing a falling off of 65,204 tons, while the production during the corresponding week of 1874 was 229,540 tons, or 182,171 tons less than last week. The production from January 1st, was 6,848,478 tons, as com-

pared with 9,725,537 to the same date last year, showing a falling off, this year, of 2,877,056 tons.

Some of the individual collieries are having trouble with their men. The miners at St. Clair, and the outside laborers at Wadesville, struck on Monday against a reduction of 10 per cent.

Bituminous.

The bituminous trade is very depressed and prices are exceedingly irregular. We hear very generally of Cumberland coal offering as low as $3 85, with an exceptional case of $3 75 per ton at Georgetown. These figures, with the prevailing freights, would equal $5 15@$5 25 alongside in this city, and $5 50 to $5 60 at Boston. The anthracite and other coal interests may well consider that they have competitors in the Cumberland companies, when such prices rule. Clearfield and Broad Top coals are offered at figures ranging from $5@$5 50 at South Amboy, while we hear of exceptional lots offering as low as $4 90. There are cargoes under demurrage awaiting almost buyers' own figures. The American Coal Company is reported to have contracted with the Transatlantic Steamship Company for a year's supply of Cumberland coal at $6 10 a ton. This is a low figure, when all the requirements of the contract are considered. The steamship company paid $1 15 more per ton for the same coal in 1873. The Catfish mines of Western Pennsylvania have closed a contract with the Great Western Railway of Canada to deliver 45,000 tons of coal at East Buffalo. The price is private, but supposed to be at about $3 75 per ton.

Shipments in the Broad Top, Clearfield, and Cumberland Regions are falling off, owing to a lack of orders. Some of the Cumberland companies are stocking coal at Georgetown, and only working their mines on partial time, while others are unable to secure shipping to fill their orders with sufficient dispatch. Some of the managers in this interest were early to realize the true condition of the business of the country, and made every effort to secure business to carry them through the year, although at perhaps some concession, while those who were firm in their prices will now be compelled to close their mines or accept figures lower than those at which the majority of the contracts were made early in the season.

Gas and Foreign Coals.—There is nothing doing in foreign coals. There have been no further arrivals excepting from Cow Bay, C. B., and they are all on account of orders. The cargo of Spring Hill (N.B.) coal advised two weeks ago has been sold to a brick works on private terms, but supposed to be at about $4 50. We hear very discouraging reports from Cape Breton relative to the coal business, and many exaggerated statements are in circulation. There is not the quantity of business doing that was expected, yet work continues, though no coal is being stocked. A press dispatch says:—"LONDON, July 12.—This morning's *Post* says the Earl of Derby, the Foreign Secretary, has been requested to receive a deputation of persons interested in the Nova Scotia coal fields, for a conference on the subject of the oppressive tariff in the United States, which is said to all but prevent the importation of the coal into that country." The duty at the present time is but 75c., and its removal would assist the business with this country but very little under the existing depression in the industries likely to consume this coal. The fact is that when Cumberland coal can be bought at Georgetown at $3.85, and Clearfield coal is sold at $5 at Amboy, and Youghiogheny gas coal at $6, there is little prospect for business in provincial coals, with or without tariff.

The Pictou *Standard* says:—The roof of a cutting at the Black Diamond Mine caved in on Wednesday last, and cut off communication from about sixteen chambers, some of which will probably not be again opened. A number of men were working in the mine at the time, and some who were near the scene of the accident had a very narrow escape. Between thirty and and forty men will probably be thrown out of work for a time."

The shipments of Domestic gas coals continue to be confined to contracts made early in the season.

Freights.

At Georgetown there is a slight scarcity of vessels, although no advance in rates has been established. Vessels are in fair supply at Baltimore, where the requirements are light. In Philadelphia there is a greater abundance of shipping than at any of the other coal ports. Rates are more firm from the shipping ports of this city—vessels being in only moderate supply. $1 25 is the common rate to Boston, although large vessels have been chartered during the week at $1 10@$1 15 per ton.

Wholesale Prices of Anthracite Coal for July f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 00	5 10	5 20	5 35	5 80	4 80
‡Pittston at Newburgh	5 05	5 05	5 15	5 25	5 75	4 80
Wilkesbarre at Port Johnston.	5 00	5 10	5 20	5 35	5 80	4 80
Plymouth, R. A., Act	....	....	5 20	5 35	5 80	4 80
Susque. Coal Co. at Amboy W.A.	....	....	....	....	....	....
Kingston at Hoboken	5 00	5 10	5 20	5 35	5 80	4 80
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 45	5 45	5 80	5 00
Old Company's Room Run "	....	....	....	....	....	....
Sugar Loaf "	....	....	....	....	....	....
Lehigh Coal Exchange "	5 55	....	5 45	5 45	5 80	5 00
Honey Brook Lehigh	5 55	....	5 45	5 45	5 80	5 00
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	....	....	....	....	....	....
†**Schuylkill Coals at Port Richmond.**						
Schuylkill white ash	4 50	4 60	4 70	4 85	5 30	4 30
Schuylkill red ash	....	....	4 90	4 95	5 35	4 30
Shamokin white and red ash	....	....	....	5 00	5 30	4 30
Lorberry	....	....	5 60	5 60	5 60	4 60
Lykens Valley	....	....	6 25	6 25	6 25	5 45

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to N. York.	45c.
" " South Amboy to New York	50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton. The expense of towing vessels from New York harbor to Rondout and back will be borne by this Company.

† Freight from Port Richmond to New York (free of discharging) 8½c. per ton.

‡ Prices to the Trade.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	..
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va., Nominal	4 75	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	....@....
Cumberland, at Baltimore	4 15@4 50	5 75@6 25
Clearfield, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 25; at Greenwich, Phil	4 60	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
*Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	6 50	6 75	6 00
Lehigh & Locust Mountain, del'd	....	....	....
Schuylkill Red Ash, del'd	....		

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

* Lackawanna grate is quoted 25c. per ton less than egg.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	.... 25 00
American Sterling " " "	.... 13 50
American Orrel " " "	15 00@16 00
Red Bank Cannel " " "	..... 14 00
Cumberland " " "	..... 9 00

Baltimore, Md. July 12, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 36	5 21
Egg	5 62	5 47
Stove	5 87	5 72
Nut	5 02	4 87
Shamokin. (red or white ash), and "Boston," freeburning white ash,		
Egg	5 65	5 50
Stove	5 85	5 70
Lykens Valley, red ash,		
All sizes	6 05	5 72

From wharf or yard, wholesale, 50@75c. additional.

By retail, all kinds and sizes, per 2240 lb. $6 75@7 75.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 35	4 50
West Virginia f. o. b. at Locust Point	5 50	
Youghiogheny Gas, f. o. b. at Locust Point	5 50	
Swanton Coal, George's Creek	4 40	

Boston. July 14, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	10 00	Anthracite	.6 50@ 7 25
Glace Bay	5 00	" retail	.7 50@ 8 00
Sydney	6 25		

Nothing doing in English cannel, and the demand will be quite limited for some months. None on the way. There is a good stock of Scotch and American cannel, and these cheaper coals are fast taking the place of the English. The *Nova Scotia* arriving has been delivered on contract. Gas coals continue to arrive quite freely, and the gas companies are now stocking up for the season with coal contracted for some time ago. In Cumberland no change. Anthracite has been in steady demand at $8 per ton, and cargo prices are nominally $6 50@$7 per ton.—*Commercial and Shipping List.*

The *Commercial Bulletin* says: "We have talked with iron and paper mill men who have been using Cumberland, and are now going back to Anthracite: but many of those who changed are determined not to go back. The yards are beginning to stock up, but the trade is improving, now that it is evident that the present high range of prices will be maintained; and from this time forth coal will probably be pretty active till late in the fall."

BOSTON, July 14, 1875.

TO THE EDITOR—Sir: The prominent feature in the trade Eastward is its marked indifference as to the future. Very few new sales making, the shipment principally on old account, dealers buying sparingly, so dependent are they on their customers laying in winter supplies to give them room to replenish. In this they are disappointed.

The general feeling among consumers is that the miners having made an "unconditional surrender," going to work at reduced rates, and as the "Combination" was professedly working entirely in the interests of the public, now is the golden opportunity for the proof of their sincerity, which they can give by reducing prices. But on the contrary, we are assured of monthly advances that will be strictly adhered to—and if necessary to maintain the integrity of the programme, further curtailment in mining will be decreed.

It is surmised by many that the "Combination" is giving in on some of the original starting points, and if yielding in one strong "put," may yield in minor points until entirely broken up.

The coal trade of Pennsylvania has always been dependent on the "Middle Men," and no recent change of base has demonstrated that it ever will maintain itself independent of them. On account of the policy of the Philadelphia President to wipe out that interest, there is little sympathy felt for that road so long as a more generous and sagacious policy is being pursued by the far wiser men in charge of New York interests—a policy so acceptable to the trade generally that time only is wanting to make them masters of the situation.

For manufacturing and domestic use, Anthracite must and will maintain the supremacy.

The Bituminous coals of Pennsylvania can find but little, if any favor in New England, so long as the superior coals of Maryland can supply our markets.

The introduction of "Cumberland" for permanent manufacturing use will be very slow and unsatisfactory to the shipper; although a cheaper fuel than Anthracite by 10 to 20 per cent. at the mill, its disadvantages preclude its general use; the purchases in that direction this year, as in '71, were a necessity, and must not be relied upon as again occurring, except under a similar necessity.

This being so, it is wise on the part of the New York interests to follow a generous policy toward all disposed to work in their line. Maryland Cumberland coal has its uses in which it is without any competitor as to quality and results, and can only increase its sales as the uses increase for which it is adapted.

W. WALLACE.

Buffalo, N. Y. July 14, 1875.

Reported by our Special Correspondent.

Prices free on board vessels here are as follows:

ANTHRACITE.

	Afloat.	F. O. B. Vessel.	Retail, Deliv'd.
Grate	....	$6 30	$7 00
Egg	....	6 30	7 00
Stove	....	6 75	7 45
Nut	...	6 50	7 20

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co	3 50	3 25	....	2 30	....

Trade is very quiet, with a slight decline in the prices of coke and bituminous coal. No advance was made in the retail price of anthracite coal, July 1st, but the wholesale price to retail dealers was advanced 10c. per ton, thus cutting the margin down to $1 40 per ton. An effort is being made to induce the Anthracite Coal Association here to restore the margin, and also to form a Coal Exchange, for the purpose of mutual conference,

and to promote and advance the interests of legitimate dealers. The coal miners at Bunker Hill, McKean County, Pa., (Buffalo Coal Company) are on a strike, and we learn that the men at Cameron are also out.

It is rumored that the Great Western Railway of Canada have concluded their contracts for a year's supply of locomotive coal, for the Eastern Division, with mines on the Allegheny Valley Railroad.

Chicago, Ill. July 12, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.
Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices.

		BITUMINOUS.	
Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
Grate and egg	9 00	Blossburg	8 00
Stove and chestnut	9 50	Indiana Block	5 50
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. July 12, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10c.	
Pomeroy coal	6½c.	
Cannel coal	16c.	
Semi Cannel	9½c.	
The following are the retail prices delivered:		
Youghiogheny	— c.	$3 35
Pomeroy	— c.	2 75
Cannel	— c.	5 50
Kanawha Semi Cannel	— c.	3 35
Anthracite	9 50@10	
Foundry coke	—	
Coke, hard and soft	10 c.	

Cleveland, O. July 12, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. f. o. b. vessels.

Youghiogheny, lump	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 50	StripVein & Steubenville	3 30
Briar Hill, according to quality	$3 05 to 4 00	Mountain Blossburgh (blacksmith)	5 40
Massillon	3 25	American Cannel Coal Co.'s Cannel	4 40
Hocking Valley	3 33		
Straitsville	3 35		

The coal market continues steady and rates the same. The amount coming forward is fully equivalent to all demands. Some difficulty is experienced in chartering vessels for upper Lake ports at ruling rates, owing to the scarcity of return freights, and a few vessel owners have declined to ship without an advance in the freights. This trouble will no doubt soon be corrected by the grain freights which are to come forward.—*Manufacturing and Trade Review.*

Detroit, Mich. July 12, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. July 12, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb.	Bituminous f. o. b.		
Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. July 12, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.
Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

Sand Creek, per ton	$3 25	Peytona cannel, per ton.	7 25
White River, "	3 00	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Grate	$8 00	Chestnut	8 50
Egg	8 60	Stove	8 75

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	7
Brazil Block	14	Peytona Cannel	28
Highland grate	14	Indiana "	24
Block Nut, domestic use.	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE(measured.)

Crushed 15c. ; Lump 12c.

ANTHRACITE,

All sizes (Wilkes-Barre and Lackawanna), $10 per ton.

Milwaukee, Wis. July 12, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.
Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Scranton	$9 50
Lehigh Prepared	10 50	Briar Hill, select	8 00
Lackawanna	9 50	Blossburgh	8 00
Pittston	9 50	Pittsburgh	7 00

New Orleans, La. July 10, 1875.

Pittsburgh coal, retail, per bbl	65c.
" wholesale	—@45c.
" steamboats, per box	50c.
" to manufacturers, per bbl	60c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	none.
" retail, "	$12 50
Virginia Cannel, per bbl	90c.
Scotch " "	
St. Bernard, wholesale, per bbl	37½c.
" retail, "	60c.

Pittsburgh, Pa. July 12, 1875.

Per ton of 2000 lb. and Bushel of 76 lb.

Youghiogheny coal, ton,	$2 00	Pittsburgh retail deliv'd. per bushel	9@10c.
" coke, "	2 50	Anth'cite on cars Lehigh	$7 75
Connellsville coal, "	2 50	" " Wilkes-Barre	6 75
" coke	$2 25@2 75		
Pittsburgh coal	1 85		

Twenty-five to fifty cents per ton additional for delivery.

COAL.—The coal trade continues very quiet and in an unsatisfactory condition, and will continue so until navigation is resumed, of which there is some prospect at the present writing. The quantity booked and ready to move as soon as there is water is large, estimated in round numbers at twelve million bushels; and, as might be expected, operators, who have so much of their capital locked up in these black diamonds, are very anxious for water. It would not only benefit the coal merchant, but the entire community.

COKE.—The market continues substantially as noted at the date of our last report; while business is not as brisk as it was in May and June, it is about all that can reasonably be expected under existing circumstances. The ending of the coal strike in the eastern part of the State has curtailed the demand very considerably, as coke was largely substituted in place of coal during the lock-out; but with only a moderate supply and limited production, prices are maintained; $2 50@$2 75 per ton delivered on cars in Pittsburgh. There is a large quantity booked here and ready to move as soon as there is water.—*American Manufacturer.*

San Francisco.

From the *Commercial Herald* of July 1, 1875.

Imports from January 1st to June 29:

Anthracite tons	6,348	English, tons	22,688
Australian, tons	46,879	Vancouver Island, tons	29,137
Coos Bay, tons	17,938	Rocky Mountain, tons	32
Cumberland, tons	6,539	Seattle, tons	23,275
Mt. Diablo, tons (5 mos)	65,515	Bellingham Bay, tons	6 170

The market, both present and prospective, appears to be fully supplied with bituminous, while there is a want felt of anthracite. The impression prevails among the trade that Sydney will be sold this summer as low as $8 50 per ton, and perhaps less. The local supply of California Mt. Diablo is continued at steady prices, so also of Coos Bay and from British Columbia mines, the latter coming into direct competition with the best West Hartley and other English coals from the mother country. Imports for the week under review embrace the following cargoes: *Leonie*, 911 tons from Newcastle, N. S. W.; *Windward*, 1,174 tons "Renton" from Seattle. Lehigh and Pittston are scarce, high, and much wanted. Cumberland continues very plentiful. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively. Cargoes of Scotch and English Steam to arrive may be quoted at $9; Cumberland $18@20; Nanaimo, $9 50@10; Seattle, $9 25@10; Sydney, $9@9 25 by the cargo."

Toledo, Ohio. July 12, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.
Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 75	Stove, screened	$8 25
Egg, "	7 75	Chestnut "	7 75
Lehigh Lump	9 50		

40 cents to $1 per ton additional for delivery at retail.

Halifax, N. S. July 12, 1875.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 50
Gowrie	2 50	Blockhouse	3 75
Victoria	3 50	Albion (at Railroad)	4 00

Toronto, Ont. July 12, 1875.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb,	From Penn Haven.	From Mauch Chunk.	From Hazleton*	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 54	2 40	2 86	3 18	3 39
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	51	72
‡ Philipsburg, N. J.	96	82	1 34	1 44	1 65
‡ Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 18	2 04	2 80	2 82	3 03
High Bridge, N. J.	2 40	2 20	2 80	2 79	3 09
Somerville and Raritan, N. J	2 80	2 60	3 20	3 19	3 49
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 95	2 75	3 35	3 34	3 64
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 35	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
§ Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76
From Mauch Chunk to New York (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal	$2 34				
From Phillipsburg, N. J., to Hoboken (for consumption) via Delaware, Lackawanna and Western RR	1 80				
From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R R. in connection with Pa. and N. Y. R.R.	2 59				
From *Lackawanna Junction* to †*Weedsport* for *Rochester and Charlotte*	2 41				
From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.*	2 58				
* To this point for Syracuse the rate is	2 06				
† To this point for all places between Rochester and Buffalo the rate is	2 59				
* The rate to this point for Syracuse is	2 22				

* Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 4c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $11 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re-shipment from this point is 2cc. less than above rate.

Lehigh Valley Railroad.

MAUCH CHUNK, Pa., July 1st, 1875.

NOTICE TO SHIPPERS.

On and after this date until further notice the rates of transportation on through coal, consigned as noted below, and passing over this Company's road from mines through, will be as follows:

	From Penn Haven.	From Mauch Chunk.
To *Newark*	2 54	2 40
" *Perth Amboy*	2 18	2 04
" *To Philadelphia via North Penn. R.R.*	....	1 75

Schuylkill Coals, per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	2 12	2 07	2 00	1 99	1 92
Philadelphia, Retail yards	2 22	2 17	2 10	2 09	2 02
Harrisburg, via Lebanon Valley Branch	1 35	2 02	1 95	1 94	1 87
Allentown, via East Pennsylvania Branch	1 70	1 65	1 58	1 57	1 50
Lancaster, and Points on Lancaster Branch, via R. & C. R.R	1 82	1 77	1 70	1 69	1 62
Dauphin, via Schuylkill and Susquehanna Branch	85	....	1 43	1 42	1 35
Slatedale Junction via Berks and Lehigh Branch	1 88	1 83	1 76	1 75	1 68
Lebanon, via Lebanon and Tremont Branch	96	....	....	....	....
From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad					94
From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad					1 39
* From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading)					1 69
* From *Port Clinton* to *New York*, within towing limits, " 53d street					2 71

For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

The rates of freight and tolls on lump and steamboat coal will be twenty per cent., and on broken coal will be ten per cent. less than the above rates.

* The charge from Schuylkill Haven to Philadelphia or New York is 11c. additional to these rates.

On and after July 4th, the Drawback of ten cents per ton now paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton, that have passed Fairmount Locks to Philadelphia and vicinity, will be discontinued.

Erie Canal.

	per 2240 lb.
Hoboken to Buffalo	75c.
" Rochester	70c.
" Oswego	65c.

The above rates are exclusive of harbor towing, trimming, unloading and tolls.

Delaware and Raritan Canal.

Tolls and Steam Towage.
Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st.	69c.		
" Greenwich "	64c.	Bituminous	64c.
" Lambertville "	57c.	Anthracite	57c.
" Port Richmond "	63c.		
" " " "	63c.	Semi-bituminous coal,	63c.
" Philadelphia "	58c.	Cumberland "	58c.
" Trenton "	37c.	Anthracite "	37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:
For Anthracite Coal 35c.
Bituminous and Semi-bituminous Coal 35c.

OFFICE OF THE LEHIGH VALLEY R. R. Co.
Mauch Chunk, July 10, 1875.

NOTICE TO COAL SHIPPERS.

Coal will be shipped over the wharves of this company at Perth Amboy, until further notice, upon the following terms, viz.:

No charge will be made for wharfage.

Ten cents per ton will be charged for shipping direct from cars into vessels, and ten cents per ton additional from stock, making a total charge on what is shipped from stock of twenty cents per ton.

To parties shipping fifty thousand tons and upwards per annum, five cents per ton will be charged for shipping direct from cars, and ten cents per ton additional from stock, making a total charge on what is shipped from stock of fifteen cents per ton.

On shipments of one hundred thousand tons and up-

wards per annum, no charge for shipping direct from cars, but ten cents per ton will be charged on what is shipped from stock.

For one hundred and fifty thousand tons and upwards per annum, a charge of but five cents per ton will be made for shipping from stock.

The railroad company will take all pea and dust coal, and in lieu thereof will allow two cents per ton on all coal shipped.

ASA PACKER, President.

Freights.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 00	....
Albany	*85	....	....
Amesbury, Mass	....	....	....
Bangor, Me.	....	2 00	1 20
Bath, Me.	1 60	1 80	1 30
Baltimore	....	....	....
Boston, Mass	1 50@1 60	1 60@1 75	§110–125
Bridgeport, Ct	....	1 50	80
Bristol, R. I.	....	....	90
Cambridgeport, Mass	1 60&30.	....	1 10
Derby	....	1 60	....
Dighton	....	....	110@125
East Cambridge	1 6 &3c.	....	...
Fall River	....	1 50	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	...	....	1 20
Hoboken	....	1 30	....
Hudson	....	1 60	....
Jersey City	....	1 30	40
Lynn, Mass	....	..	‡110–225
Middletown	....	....	1 10
Mystic	....	....	....
Newark	....	....	....
New Bedford	....	1 50	90
Newburyport	....	1 90	1 35
New Haven	....	1 50	90
New London	....	1 50	1 00
Newport	1 35	1 50	90
New York	85†	1 40@1 55	40
Norfolk, Va	....	60	....
Norwalk	....	...	90
Norwich	....	1 65	1 05
Pawtucket	1 40‡	...	‡100
Philadelphia	....	1 00	....
Portland.	....	1 75	1 20
Portsmouth, N. H.	....	1 85	1 40
Providence	....	1 50	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y.	....	1 50	....
Richmond, Va.	....	90	....
Rockport.	....	....	....
Saco.	....	....	....
Sag Harbor.	....	....	1 00
Salem	1 60	1 75	110@125
Salisbury Pt., Mass.	....	....	1 50
Savannah, Ga.	....	1 50	....
Stamford.	....	....	85
Stonington.	....	....	....
Taunton	..	..	80@90
Trenton, N. J.	....	....	....
Troy	....	....	....
Warren, R. I.	....	....	....
Washington, D. C.	80	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	...	....
Wilmington, N. C.	....	1 50	....

§ 3c. per bridge extra.
† And discharging. ‡ And towing.
* And discharging and towing,

THE BRITISH COAL AND IRON TRADES.

July 3, 1875.

England.—Great depression exists in all the districts in both the coal and iron trades. It is believed the price of pig iron, in the North of England, has reached its lowest figure, as makers will blow out their furnaces and reduce production rather than accept lower prices. In the finished iron trade the orders on hand are being rapidly worked off, and but few new ones coming to hand. The ship-building trade is very dull, while engineers are fairly employed. The Lackenby Iron Company, near Redcar, will stop one furnace this week, and some of the ironmasters will take advantage of the present dullness of trade to stop some of their furnaces to make repairs. There has been an increase in the demand for pig iron during the last two weeks, and shipments, which had fallen very low, have been rather better. The wages question in the iron trade is exciting considerable attention. The employers finding it impossible to continue paying upon the Derby scale, have guaranteed the puddlers nine shillings a ton for the ensuing quarter, if at the end of that time they will accept the new sliding scale, with 8/ 6d. as the minimum. It is feared the men will not submit to these terms, and the present condition of the iron trade does not warrant the employers in paying more. The coal trade continues very quiet, manufacturing coal, however, is in pretty good demand, and prices fairly maintained. Coke is in steady request, but prices are lower.

In *West Cumberland* there is not the least indication of improvement, or that even the worst has passed The manufacture of pig iron has diminished, and is now considerably short of what it was a month ago. It seems quite probable that some additional furnaces will have to be blown out to bring production nearer the wants of consumers. The bar iron works are doing but very little, and some are entirely closed. Engineering works, foundries, etc., are, comparatively speaking, fairly employed The manufacture of steel continues brisk. At a meeting of the West Cumberland Coal Association held on the 24th ult., it was decided to make no change in the price of coal. The demand in the home market is very light, and coal of all kinds is abundant. The demand for coal in the Irish markets is somewhat improved, but prices remain unchanged—Belfast, 13/; Dublin, 15/. The pits work from 5 to 12 days a fortnight, according to circumstances. Coke is likely to be extensively manufactured in this district, as coal well adapted to making a first-class quality abounds.

In the *Barrow-in-Furness* district, some of the works have not more than half of the melting plant engaged, and others are stopped entirely. Some establishments, however, have orders to keep them fully employed for several months. Taking the whole district, about one-third of the melting plant is idle, owing to the limited demand for iron. Stocks of iron in hand are small, as makers are confining the production to the extent of the demand Steel makers are mostly engaged on American and Continental orders, which will be worked out in about three months. There are no orders reported to employ local works during the winter. Makers of finished iron have but few orders on hand, and their works are not more than half engaged. Engineers, etc., are doing a quiet business. Railway rolling stock manufacturers are busy, and have good contracts to fill.

In *Yorkshire and Derbyshire* the coal trade does no improve. A reduction in prices has not openly taken place, yet there is considerable underselling, it apparently being understood that the owners shall simply do the best they can. A reduction of 6d per ton took place on the 1st inst. on the carriage of all coal going to London via the Great Northern Railway, but it has no influence on trade. The consumption of coal is actually falling off, which results from the high prices which ruled a year or two back having brought out numerous fuel saving inventions, which are now in practical use. The prices received for coal make a further reduction in miners' wages probable. Labor is in such abundance that many of the men, as the masters do with their coal, are offering their services at less than the acknowledged standard. The high wages paid during 1873 attracted a great many laborers to the colliery districts These have now become tolerably good colliers. At Levaithe, near Worsborough, a couple of miners' houses made of iron have just been completed, and a good many others of the same material are, it is said, likely to be put up by M. MITCHELL, the managing partner. It is understood that arrangements for the taking over of the Shirland Colliery by the South Yorkshire and North Derbyshire Miners' Association are all but completed. The sum to be paid is £70,000, of which a deposit of £10,000 was made in the early part of last year. The working of the colliery by the Miners' Association is looked forward to with a good deal of interest by the coal owners of the district, for the leaders of the former will be in a position to know what wages the state of trade and profits made will admit of being paid to the colliers. Mr. MUNDELLA, M.P., will be chairman, and Mr. MACDONALD, M.P., vice chairman. The iron trade of the district, although not good, is much better than in most districts in England, and many of the works are fairly employed. At Sheffield, the manufacture of armor plates continues quite active, as does also the Bessemer steel trade.

In the *South Lancashire and Cheshire* district, the coal trade continues quiet, with considerable undersellings among the smaller firms, which has resulted in making it necessary for the leading firms to offer concessions to their customers. Purchases are being made almost entirely for immediate requirements, purchasers being willing to take the risks of the market.

A reduction of wages is being agitated. The impression that the prices of iron have reached the lowest is gaining ground. Consumers are slowly coming forward for supplies for the next few months, but there are no indications that large buyers will take their usual quantities. The finished iron trade is rather dull, buyers holding off until after the quarterly meeting, when a reduction in prices is expected.

In the *South Staffordshire* district, the leading firms have reduced the price of thick coal 2/ a ton all round, and slack in the usual proportion. According to an agreement with the men, this involves a reduction of 3d. per day in wages, and notices have been given accordingly. The collieries of this district are only winding eight hours a day. The masters feel that they require not so much lower wages as more work, as the dead charges are nearly as great on winding 500 tons per day as on 1,000 tons They ask an extra hour per day, and it is hinted that, were this conceded, the proposed reduction in wages might be dispensed with. As a rule, the collieries throughout the district are only in partial operation. The iron trade is very unsettled, awaiting quarter day. The general impression is that there will be a reduction of £1 per ton in the price of branded iron, bringing bars down to £9 10/, with the usual extras for the makes of several of the leading firms. The manufacturers have offered puddlers a minimum of 9/ per ton, which is not acceptable to the men, and trouble seems likely to follow. Sheet iron is in very fair inquiry.

The following are the leading quotations of iron:

——	Tees, f.o.b.	Barrow, f.o.b.	North Staffordshire, at Works.
No. 1 Pig	58/	*82/6	82/6
No. 2 "	56/	*80/	
No. 3 "	52/6	*77/6	80/
No. 4 Forge.	50/	85/	77/
Common Bars	160/ @165/	180/	....
Rails	142/6@150/		

* Bessemer pig.

Common bars in South Staffordshire, £8 17/6@£10, and best bars, £9 10/£10 18/.

Prices of coal f.o.b Tyne—Steam, 12/6@16/; household, 12/@16/; gas, 9/@11/.

Wales.—Coal is in abundance and prices are declining, although a good demand for steam coal exists at some ports, and especially at Cardiff, where the foreign clearances last week bear favorable comparison with the weekly exports of more favorable times, and were by far the largest that have been recorded for months past. The inquiry for house qualities, however, continues very dull. The coke trade is quiet, and patent fuel is in good demand. It is rumored that the Sirhowy Railway has been handed over to the London and North Western Railway Company. The iron trade continues in a very unsettled condition, with no indications of an early improvement. The ironmasters are having the benefit of cheap fuel, but the wages of puddlers, furnacemen, etc., continue very high, with no indications of a reduction, so that makers are unable to offer greater concessions in prices to induce business. Dealers and merchants generally are still buying only for immediate necessities. Pig iron is quoted at £4@£4 10/ for No. 1; £3 15/ for No. 4 forge; and £4 for refined. Rails are quoted at £6 15/@£7 for ordinary sections. Coal nominal.

Scotland.—The iron market has again this week taken a decidedly favorable and upward turn, the prices of both warrants and makers' brands having increased. There appears to be an impression that an attempt will be made to diminish the make of pigs, which is at present not quite so large as it was a few weeks ago. It is still, however, quite large enough for the demand, for although exports have been on the increase, and imports falling off, considerable stocks have accumulated in the hands of a few makers. All last week there was scarcely any change in the prices of warrants; but on Monday the market assumed a fair tone at the opening, and there was an advance of 6d. in price, a fair business having been done at 60/ cash. On Tuesday, a general rise took place in the price of makers' iron, which led to a strong market, with a good business at from 60/ to 60/ 10½d. On Tuesday afternoon the tone was a little easier, but 60/ 7½d. was paid. Makers' brands have increased from 1/ to 2/ all round, the quotations being as follows: G. m. b., at Glasgow, No. 1, 62/; No. 3, 60/6d; Gartherrie, 68/ and 63/; Coltness, 69/ and 65/; Summerlee, 66/ 6d. and 62/; Langloan, 67/ and 62/; Carnbroe, 64/ and 62/; Monkland, 62/ and 60/6d.; Clyde, 63/ and 61/; Govan, at Broomielaw, 63/ and 61/; Calder, at Port-Dundas, 69/ and 62/; Glengarnock at Ardrossan, 68/ 6d. and 62/ 6d.; Eglinton, 62/ and 60/; Dalmellington, 61/ and 60/; Carron, at Grangemouth, 70/; Shotts, at Leith, 67/ 6d. and 64/; Kinneil, at Bo'ness, 63/ and 60/ 6d. The shipments of pig iron from Scotch ports for the week ending the 26th ult. amounted to 13,101 tons, showing the large increase of 6,686 tons as compared with those of the corresponding week of 1874. There is an increase in the shipments up to this date over those for the same period of last year. of 64,865 tons. The imports of Middlesbrough pigs at Grangemouth for the week were 1 000 tons, being 413 less than in the corresponding week of last year. Meetings of the iron and coalmasters have been held in Glasgow with respect to the wages question, at which it was not deemed expedient to come to any definite combined resolution with reference to a further reduction of wages. The impression is gaining ground among the employers that it would not be wise at the present moment to reduce the wages further, as it might very likely have the effect of driving more of the miners to emigration and to other kinds of employment. There is a good reason for believing that at least 5,000 miners have left the collieries since the wages were reduced, and living with them just now is such a difficult matter that, despairing of bettering their circumstances in the pits, very little more hardship entailed upon them would lead to a much more general desertion. It is highly probable that a change in the state of affairs may be induced in another fashion. Some coalmasters are seriously considering the propriety of closing up some of their pits for the present, until the trade becomes more remunerative. Coals are still filling the market to overflowing, the present comparatively low price having no effect in stimulating the trade. Prices have not varied in any material degree since last week. The pig iron trade, notwithstanding the higher prices of last week, is not very remunerative. There is a talk of a portion of the blast-furnaces being blown out for a time, and this course has actually been adopted in the case of four furnaces at Calder, with the immediate result of the miners being dismissed from their employment. At Airdrie, several of the malleabl iron works are so poorly supplied with work that they are paying off a proportion of their hands. Matters in this branch of the trade are in a better position at Motherwell, where the two malleable works are doing a fair business; but there have been disasters in other departments.

A London Coal Firm Fails, Owing $1,000,000.

LONDON, July 15.—LAMBERT BROTHERS & SCOTT, coal merchants, No. 85 Grace Church street, have failed. Their liabilities are $1,000,000.

Import Duties.

The following are the duties in Gold:

Flat Iron, not less than 1, nor more than 6 inches wide, not less than ⅜, nor more than 2 inches thick. *Round Iron*, not less than ¼, nor more than 2 inches in diameter, and *Square Iron*, not less than ½, nor more than 2 inches square per pound 1 c.

Flat, Round or Square Iron, of larger or smaller sizes than the above mentioned, per lb ..... 1½c.

Provided, that all iron in slabs, blooms, loops, or other forms,

less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided, that none of the above iron shall pay less than 35 per cent.

Railroad Bars—Iron.....70c. per 100 lb.
Railroad Bars—Steel.....$1.25 per 100 lb.
Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb..... 1¼c.
Scrap Castings per ton..... $6 00
" *wrought* " " 8 00
Pig Iron per ton 7 00
Iron ore 20 per cent. *ad valorem*
Antimony crude or regulus, 10 per cent.
Copper Ore—On all fine contained therein, 3c. per lb.
Old Copper, fit for manufacture only, 4c. per lb.
Copper, pigs, bars, ingots or plates, 5c. per lb.
" sheets, bolts, nails, spikes, rods, pipes, &c., 45 per cent
Tin, in bars, blocks or pigs, and grain tin, free.
Tin Plates, or sheet, and terne or taggers tin, 1 1-10c. per lb.
Lead—Bars or pigs, 2c. per lb. Old lead, for manufacture only, 1½c. per lb. Pipes, shot and sheets, 2¾c. per lb.
Zinc, in blocks or pigs, 1½c. per lb.; in sheets, 2½c. per lb.; manufactures of, 35 per cent.
Quicksilver, free.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, July 16, 1875.

American Pig.—Business does not show any perceptible improvement, nor is it customary to expect it at this season of the year. The production is light, but consumption is in the same proportion. Rolling mills, foundries and other consumers are closing, and until they prepare to resume, no improvement can be looked for. The leading furnace companies claim to be firm in prices on the basis of $28 for No. 1 foundry; but this is an outside figure. Good iron can be bought at $27, while fair can be bought at $26. The market is in such a condition that prices can only be learned by parties making *bona fide* offers for round lots. A furnaceman said to us a short time ago: "If we were to offer to sell at $25 a ton, buyers would expect less, so we continue to quote at $28, but will give any reasonable offer close consideration." We quote No. 1 Foundry, $26@$28; No. 2, $24@$26; and forge, $22@$25.

Scotch Pig.—Sales continue to be made only in a small way. The arrivals have not been large, and stocks are light. Prices in Glasgow remain steady, but very well informed parties think, upon analyzing the nature of the business doing there, that they are rather inclined to fall than advance. Prices in this market are not so irregular as they were. We quote Eglinton at $29 50@$31; Glengarnock, $31 50@$32; Coltness, $31 @$32; and Gartsherrie, $31@$32.

Rails.—We note a sale of 1100 tons of American 50 lb. for Eastern delivery on private terms. There are several inquiries in the market, which are considered likely to result in business. We continue to quote steel at $70@$75 at the mills, and iron at $48@$50.

Old Rails.—We learn of no business doing, and in its absence quote nominally at $26 50.

Scrap Iron.—There is a rumor that 1,500 tons have been sold during the week in different lots, and at different prices, but we are unable to trace the particulars. $31@ $32 is being asked from yard for quantities of good No. 1 scrap; but small lots can be purchased at less. The mills dependent on this market for scrap are very quiet, and some doing nothing. The demand for manufactured iron is equally light, and the mill owners do not see any chance of improvement for the next three months. All the mills working under the Philadelphia sliding scale will shut down to-morrow, the contract with the men expiring on Monday. An attempt will be made to establish a more reasonable list of wages, the details of which, however, are not decided upon. After a stoppage of 12 weeks, owing to a demand for $5 per ton having been made by the Richmond (Va.) puddlers, work has been resumed at the old figure—$4 50 per ton. At Morristown $4 is paid, and at the Harrisburgh Rail Mills, $3 50. A number of the roughers and catchers at Burdens' Troy Mills struck on Monday, but their places are being filled.

Boston.

July 14, 1875

IRON. There is no movement to report in Pig Iron aside from the regular small sales to consumers, and prices are unchanged. The small stock of Scotch Pig here is held at $33@$35 per ton, but no sales of importance. American Pig is selling in lots from store at $30 @$32 per ton for No. 1 brands, and a lower range for No. 2. Refined Bar is selling at $58@$59 per ton, and at this range holders are pretty firm. Common Bar is quiet at $53@54 per ton. Rails are inactive and held at nominal quotations. Sheet Iron is selling slowly at unchanged rates.

Imports of Pig Iron from January 1 to July 10:

	1874.	1875.
From Great Britain, tons ...	2,375	1,350
" Coastwise	6,783	7,772

COPPER.—The demand for all kinds of manufactured continues quite moderate, and prices are unchanged. We quote Sheathing at 30c; Copper Bolts and Braziers at 31c.; and Yellow Metal Sheathing at 21c per pound. In New York there have been sales of about 200,000 pounds Lake at 22¾@23c. per pound.

TIN.—We quote Straits at 18¾@19c., gold, but no sales to report, except in a small way.

TIN PLATES. Trade is dull and prices weak. We quote currency rates as follows: Charcoal I C at $10@$10 25; Coke at $7 75@$8 50; and Terne, including all kinds, at $7 75@$10 75 per box.

LEAD.—There is nothing new to report in the market for Pig Lead We quote foreign at 6¾@7c., and domestic at 6@6¼c. per pound, gold, with small sales of the latter. Lead Pipe and Sheet Lead are steady at 9½c.; Tin Lined Pipe at 16½c; and Block Tin Pipe at 45c. per pound.

Imports from January 1 to July 10.

	1874.	1875.
Pigs	60,317	19,402

—*Commercial and Shipping List.*

Cincinnati.

July 13, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The demand for pig iron is very light and prices are less firm. We quote:

CHARCOAL.

Hanging Rock, No. 1 Foundry..... .....$27 00@28 00—4 mos
" No 2, " ..... 25 00@26 00—4 mos
" Mill .. .. 24 00@25 00—4 mos
Tennessee No. 1, Foundry..... ... 26 00@27 00—4 mos
Tennessee, No. 2, " ..... 25 00@26 00—4 mos
" Mill..... 24 00@25 00—4 mos
Missouri, No. 1, Foundry..... .... @ ....—4 mos

STONE COAL.

Ohio, No. 1, Foundry..... 25 00@26 00—4 mos
" No. 2, " ..... 24 00@25 00—4 mos
Ohio Mill .... 24 00@00 00—4 mos
Missiouri, No. 1 Foundry..... 28 00@29 00—4 mos
" No. 2, " ..... 27 00@28 00—4 mos
" Mill ..... 26 00@27 00—4 mos

CAR-WHEELS.

Hanging Rock, C. B..... 40 00@50 00—4 mos
Tennessee " ..... 35 00@40 00—4 mos
Missouri " ..... 35 00@40 00—4 mos
Alabama " ..... 35 00@40 00—4 mos

BLOOMS.

Charcoal .... 70 00@ 80 00—cash

SCRAP IRON.

Cast..... 65c.@ 90—cash
Wrought ..... 1 00@1 25—cash

Chicago.

July 12, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron. Quotations are as follows:

No. 1 Coltness..... .....$46 00@ ....
No. 1 Gartsherrie .... 45 00@ ....
No. 1 Summerlee..... ..... 44 00@ ....
No. 1 Glengarnock..... 42 00@ ....
No. 1 Eglinton..... 40 00@ .
Wareer's "American Scotch" .. .. 38 00@ ....
Massilon No. 1 Foundry ..... 35 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous) ..... 31 00@ ...
No. 2, " " " ..... 29 00@ ....
No. 1 Mill.. ..... 27 00@ ...
Union "A" 1 (Anthracite)..... 28 00@ ....
Union "B" 1 (Anthracite)..... .. 27 00@ ....
No. 1 Lake Superior (charcoal)..... .... 32 00@ ....
No. 2 Lake Superior " ..... 30 00@ ....
No. 3 Lake Superior " ..... 33 00@ ....
No. 4 Lake Superior " ..... 35 00@ ....
Bessemer Steel Rails..... ..... 76 00@ ....
New Iron Rails..... 52 00@ ..
Old Rails..... 28 00@ ...

Cleveland, Ohio,

July 12, 1875.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore:

FOUNDRY IRON.

No. 1, Lake Superior Charcoal ..... 32 50@...
No. 2, " " ..... 31 50@....
No. 1 Anthracite..... 29 50@....
No 2, " ..... 27 50@....
No. 1, Bituminous foundry..... 29 50@ ..
No 2, " ..... 27 50@....
American Scotch, No. 1, Cherry Valley..... 31 50@....
" " B—1, " " ..... 28 00@...
" " No. 2, " " ..... 27 00@....
No. 1, Massilon..... .. .. 31 00@....
B—1, " ..... 29 00@ ...
No. 2, " ..... 27 00@

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal..... 31 50@....
No. 4 " " " ..... 32 50@....
Nos. 5 and 6 " " ..... 34 00@....

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal ..... 32 00@....

FORGE IRON.

No. 1, Gray..... ..... 26 50@...
White and Mottled..... 24 00@ ..

The iron markets remain without much change. Pig is in fair demand, in small lots, and prices are firm and steady. Holders are anticipating increased demand, as inquiries for round lots are frequent. Stocks are accumulating somewhat, but there is no disposition to cut down the rates but a trifle as they are regarded down to the bottom figures, which may advance as the demand becomes stronger. It would be advisable, therefore, for consumers to anticipate their wants so far as possible, and make their purchases at once.—*Manufacturing and Trade Review.*

Indianapolis, Ind.

July 12, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill..... .....$48 00@50 00
Old Rails " ..... 24 00@26 00
Hanging Rock Charcoal Pig No. 1 foundry 28 00@29 00—4 mos
" " " " " 2 " 26 00@28 00—4 mos
" " " " Mill..... 24 00@26 00—4 mos
Car Wheel C. B..... 40 00, nominal.

STONE COAL.

Indiana No. 1 Foundry pig Red Short ... 24 00@26 00—4 mos
" 2 " " " 22 00@24 00—4 mos
" 1 Forge " " ....@ ....—4 mos
" 2 " " " ....@ ....—4 mos
Ohio No. 1 Foundry pig Cold Short..... 25 00@26 00—4 mos
" 2 " ..... 24 00@25 00—4 mos
" Mill..... ..... 23 00@24 00—4 mos
" No. 1 Foundry, Neutral..... 26 00@28 00—4 mos
" No. 2 " " ..... 25 00@27 00—4 mos
Merchant Bar..... 2½c.—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb.... 5 c.—3 mos
1st " Com. Sheet for No. 24, W.G. " ..... 4 c.—3 mos
1st " Charcoal Sheet " " " ..... 5½c.—3 mos
Best Bloom Galvanized Sheet, discount 20 per cent....— cash.
2d quality " " " 30 " ....— cash.

f. o. b. in Indianapolis.

Louisville.

July 13, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market for all grades of metal is dull, with a strong tendency to inside figures.

The usual time, 4 mos., is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores..... $27 00@28 00
No. 2 " " " ..... 25 00@26 00
No. 1, Mill, from " " ..... 23 00@24 00
No. 1. foundry, from Alabama, Georgia and Tennessee ores .... 25 00@26 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores 24 00@25 00
No. 1, Mill, from " " " " " 23 00@24 00

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores.... .... 25 00@26 00
No. 2, " " " " " ..... 24 00@25 00
No. 1, Mill, " " " " " ..... 23 00@24 00
No. 1, foundry, from Ala. Ga. and Tenn. ores.. 25 00@26 00
No. 2, " " " " " ..... 24 00@25 00
No. 1, Mill, " " " " " ..... 23 00@24 00
No. 1 foundry, from Missouri ores..... 27 00@28 00
No. 2 foundry, from Missouri ores..... 26 00@27 00
Fo. 1 Mill, from Missouri ores..... 26 00@27 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores..... 35 00@40 00
" " Tennessee " ..... 30 00@33 00
" " Alabama and Georgia ores..... 30 00@ 35 00
" " Kentucky ores..... 28 00@35 00

Milwaukee.

July 12, 1875.

The following are the present prices, per ton of 2,240 lb.:—

Frankfort L. S. Charcoal, No. 1.....$30 00
" " " No. 2 & 3..... ..... 28 00
" " " No. 4 & 5..... ..... 31 00
" " " No. 6..... 35 00
Mil. Anthracite L. S., No. 1..... 30 00
" " " No. 2..... 28 00
Wisconsin Iron, No. 1..... ..... 26 00
Mahoning Valley Bit's No. 1..... 32 00
" " " No. 2..... 30 00

Pittsburgh.

July 12, 1875.

Specially reported by A. H. CHILDS, Esq., Commission Merchant for the sale of pig iron, blooms, ore, etc.

Market quiet and unchanged Many of the mills are now engaged in taking stock, and very few are buying to any extent for immediate use. There is some disposition, however, to purchase lines for delivery during August, September and October, but holders are generally averse to selling for future delivery at prices now ruling. Foundry iron is very dull.

QUOTATIONS.

No 1. foundry..... .....$27 00@28 00—4 mos
" 2. " .... 25 00@26 00—4 mos
Gray Forge ... . 24 00@25 00—4 mos
White and mottled..... 22 00@23 00—4 mos
Hot blast charcoal..... 28 00@30 00—4 mos
Cold blast charcoal..... ..... 35 00@40 00—4 mos

The *American Manufacturer* of July 14 says:

"PIG IRON.—Trade in pig iron circles continues very quiet, as it nearly always is during the first half of July, and the indications at the present writing are not very encouraging for an immediate improvement. The unsatisfactory condition of trade in finished irons, which has been somewhat aggravated, recently, by eastern failures, has a damaging effect upon the market for raw iron and the general outlook, so far as relates to the purchasing interest, is not regarded as favorable as it was last month. The probability is that the mills generally will continue to adhere closely to the hand-to-mouth policy, buy only for immediate wants, as the mills cannot see their way clear to lay in a two or three months' supply, and, in addition, they realize the fact that if they were so disposed an attempt would be made to put up prices. In some respects the general position of the market is favorable to the producing interest, in others it is not; stocks are gradually being reduced, the consumption for some time past having been in excess of the production, but mill men generally talk very discouragingly, alleging, in addition to a falling off in business, that current rates afford no margin for profit. Foundry grades continue very dull, and charcoal irons are weak and drooping; they are lower now than they have been, if we mistake not, at any time since the panic; we are cognizant of some foundry men who bought charcoal iron, not that they had any immediate use for it, but because they thought it was good property, and were impressed with the belief that it could not possibly go any lower, whereas to-day they could buy the same kind of iron for $2 to $3 per ton less. The stock of iron of this character is large, considerably in excess of the demand, whereas the market for mill irons is in a very different position."

"MANUFACTURED IRON.—The general position of the market for finished irons continues unsatisfactory, recent eastern failures having exerted an unfavorable influence, and in addition to the fact that rates are unremunerative, business is falling off, as it generally does at this season of the year. There is a very general complaint being made by manufacturers in regard to business, present as well as prospective, but it is hoped there will be an early improvement; we heard one of our largest manufacturers remark that he thought mill men generally would be well satisfied if they could only make expenses, which is better than being stopped, as in addition to furnishing employment for a large number of men, they are enabled to retain their trade, are not obliged, as they were during the lock-out, to force their

customers to seek elsewhere. Prices continue irregular and difficult to quote correctly; merchant bars $2 25@2 30 western, and $2 35@2 40 eastern classification."

PIG METAL SALES REPORTED FOR THE AMERICAN MANUFACTURER FOR THE WEEK ENDING JULY 14, 1875.

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

30 tons No. 1 foundry ..... $28 00—4 mos.
500 tons gray forge ..... 24 00—4 mos.
100 tons gray forge close ..... 24 00—4 mos.
200 tons mottled ..... 22 50—4 mos.

ANTHRACITE.

30 tons No. 1 foundry ..... $28 00—4 mos.

COKE.

10 tons No. 2 foundry, Connellsville ..... $24 00—4 mos.
10 tons No. 2 foundry, " ..... 24 00—cash
500 tons cold short, Allegheny ..... 25 50—4 mos.
200 tons cold short, Allegheny ..... P. T.

Richmond, Va. JULY 14, 1875.

Reported by ASA SNYDER, Esq.

There is an active inquiry here for well-known brands of Wheel Irons. This class of iron sells as quickly as it reaches this point, at quotations. These figures are very unsatisfactory for makers, as they are considered below actual cost. New brands of charcoal irons have accumulated, and are offered considerably below quotations.

Virginia Cold Blast Charcoal Pig Iron ..... $30 to $35
" Warm " " " " " ..... 28 to 32
" " " Coke " " 1 X ..... 26 to 27
" " " " " " 2 X ..... 25 to 26
" " " " " " 3 ..... 24 to 25
" Anthracite 1 X ..... 27 to 28
" " 2 X ..... 26 to 27

San Francisco, Cal.

From the *Commercial Herald* of July 1st, 1875.

Our markets seem to be overloaded, and therefore depressed, as they are the world over, owing to the overproduction of pig and other iron the past few years. Some statistics upon this point we gave last week. With us stocks of most descriptions of raw and manufactured iron, etc., are liberal, and prices favor the buyer. The price of Australian Block Tin has declined to 22½c. Scotch Pig Iron is for spot parcels nominal at $38@$40; same to arrive, $34@$35. Charcoal Tin Plate, $11 50 per box.

METALS.

NEW YORK, Friday Evening, July 16, 1875.

Gold Coin.—During the week past gold has ranged from 114⅛ to 116½, and closed to-day at 114⅜.

Bullion.—Fine silver bar is quoted at $1 21@22 gold, per ounce, and fine gold bar, par ($20 67 gold per ounce) to ½ per cent. premium.

Copper.—There is much more firmness to this article. Manufacturers' stocks are low, inquiries have improved considerable, and prices are firm at 22⅞c. being bid, and 23¼c. asked. The sales during the week have not been large, aggregating but from 250,000 to 300,000 lb. at 22¾c.@23c. Chili Bars are quoted at £80 10@£81 in London.

Messrs. JAMES & SHAKESPEARE, of London, under date of July 2, say:

"In Bars we note but few transactions; good ordinary brands have sold from £81 5/ up to £82 7/ 6d. per ton, but the indisposition of both buyers and sellers to operate at current rates is such as to prevent any business being done, except on a very trifling scale, and each sale is generally the subject of rather protracted negotiations.

"Stocks in England and France (reduced to pure Copper), also Chili, chartered and afloat for same:

	June 1,	July 1st.	
	1875.	1875.	1874.
Liverpool and Swansea:	Tons.	Tons.	Tons.
Chili—in Ore, Regulus & Barilla	1,440	691	3,205
Chili—in Bar & Ingot	12,316	13,621	14,315
London:			
Foreign Copper, chiefly Australian	8,107	8,169	6,253
English Copper	50	50	100
Havre:			
Chili Bar and Barilla	1,553	1,027	2,888
Other Foreign	230	85	140
Actual Stocks	22,696	23,643	26,901
Chili chartered and afloat	6,078	6,036	5,596
Gross Totals	28,774	29,679	32 497
Price of Chili Bars (G.O.B.) per ton	£82½	£82	£78
Price of Wallaroo Cake "	90	89½	90

"Deliveries from stock in England and France:

	1875.	1874	1873.
January 1 to June 30, Tons	32,015	34,195	28,865
During June alone, "	4,700	6,756	4 749

"The direct imports from the West Coast of South America into England during the month of June were equal to 3,833 tons pure; into Havre, 241; during the same period 1,573 tons of other foreign copper entered the ports of London and Havre, making altogether a total of 5,647 tons. The mails received here from Chili during June advised charters for together 4,271 tons, against 4,182 tons during June, 1874, and 4,908 in June, 1873. During the present year, 23,460 tons have been so advised, against 24,297 tons in 1874, and 21,196 tons in 1873."

Tin.—Pig tin and tin plates are quiet in a large way, although there is a fair jobbing business doing in both. We quote Straits, L. & F. and Refined Tin at 18⅝c.@19c., and Banca at 23c.@23¼c. gold. Straits is quoted at £80 in London, and $22 50 at Singapore. Charcoal tin plates are quoted at $8 12½@$8 25; ternes, $7 37½@$7 50; coke tins, $6 50@$7; and ternes, $6 62½@$7, gold, per box.

Messrs JAMES & SHAKESPEARE, of London, under date of July 21, say:

"Foreign descriptions keep very depressed, and since the date of our last issue, a further decline of about 1/ per cwt has taken place in consequence of a few forced sales by parties apparently entertaining an unfavorable opinion of the future; the bulk of the stock, however, is still firmly held for higher prices, and though at the moment purchasers show no desire to operate, it is, on the other hand, very doubtful whether any important quantity could be obtained at the existing quotations.

The following statistics show the position of this metal:

	1875.		1st July.	
	1st Jan Tons	1st June Tons	1875. Tons	1874. Tons
Stock of Foreign in London,	2,897	5,891	6,127	2,556
Banca in Holland (in second hands)	488	963	456	455
Billiton in Holland	1,053	752	741	1,122
Actual Stocks	4,438	7,606	7,324	4,133
Straits afloat for Europe	1,586	632	730	700
Billiton " "	699	582	941	350
Australian afloat for Europe (estimated)	1,350	1,250	900	800
Gross total	8,073	10,070	9,895	5,983
Price of Straits per ton	£95½	£83	£82	£101

"Deliveries of foreign tin in London and Holland, including Australian in Ore:

	1875.	1874.	1873.
1st Jan. to 30 h June tons	9,829	8,227	7,067
During June only "	1,499	1,652	1,212

Lead.—The sales during the week have not amounted to more than 100 tons at 5·95c@6c. gold. The arrivals are not large, and stocks are light, and generally held in strong hands. There is nothing doing in Foreign, which is held at 6⅜c@6⅞c., gold.

Spelter and Zinc. Domestic Spelter continues very quiet at 7·35c@7¼c., currency—the former figure for cash, and the latter 30 days. Foreign is nominal at 7⅛c@7⅜c., gold.

Antimony is selling in a jobbing way at 13c@13½c., gold

Quicksilver.—This market is quiet at 80c. per pound, and San Francisco, 70c. The London market continues nominally at £11.

The San Francisco *Commercial Herald* of July 1, says:

During the month past an active demand has existed, most of the time for exports to China and for New York at 65c., and this was the regular uniform price, with an occasional sale of a few hundred flasks at this rate less 1@2½ per cent. off for cash. At the close, however, for lack of supply for urgent shipment by the out-going China steamer, prices have been advanced to 70c. with sales. We, however, do not believe this rise to be a permanent one. We note sales of 1,000 flasks in lots for export at 65@67c. Cablegrams from London report a decline to £11 per flask.

The receipts for the month of June aggregate 4,096 flasks, of which 320 flasks were received from coast ports and 3,776 flasks from Bay points.

Our exports by sea for June were as follows:

To	Flasks.	Value.
China	1,721	$86,547
Japan	77	3,921
Mexico	295	14,636
Victoria	4	198
Australia	90	4,475
Callao	55	3,000
Central America	4	200
Total	2,246	$112,977
Totals in June, 1874	2,453	236,073

The *City of Tokio* carried this day 1,338 flasks for China, valued at $66,704, and 57 flasks for Japan, valued at $2,937.

FINANCIAL.

New York Stocks.

July 16, 1875.

The absence of a large number of operators from the New York Stock Board during the week has had the effect of confining transactions to pretty narrow limits. The market is generally firm, however, and closed yesterday at an advance on quotations reported in our last.

A dividend of 5 per cent., payable on and after August 2d, has been declared by the Delaware and Hudson Canal Co.

Baltimore and O. RR. was quoted at close of the Baltimore stock market yesterday at 175 bid. The interest on the preferred stock and coupons of '75 and '80 of this company will be paid on application by the Merchants' National Bank, Baltimore.

Coupons on the bonds of 1862 of the C. & O. Canal Co, due June 24, will be paid by Alex. Brown & Son, Baltimore.

The coupons of the Milwaukee Iron Co. will be paid by the Metropolitan National Bank, N. Y.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shares
Pennsylvania Coal Co.	—	—	270	800
Consolidation Coal Co	—	—	46½	—
Spring Mt. Coal Co	—	—	64⅛	—
American Coal Co.	—	—	60	—
Maryland Coal Co.	—	—	19	—
Cumberland Coal and Iron Co.	—	—	116	—
Del., Lack., and West. RR. Co.	121¾	120¼	120¼	4160
Morris and Essex RR	102⅛	101⅜	102	152
New Jersey Central RR. Co.	112	111	111	190
Delaware and Hudson Canal Co.	124	122	124	243
Quicksilver Mining Co. pref'd	22	21	21	500
" " " Common	15	14	14	600
Mariposa Land & Min. Co., various	13	9½	10⅝	4825
St. Louis & Iron Mountain RR.	—	—	18	400
Lehigh & Wilkes-Barre Coal Co.	—	—	—	—
Total Shares sold				11870
Sales for the week previous				16335
Decrease				4465

The following are the sales of bonds for the same period:

	Sales.	Price	
Ches. & O. R. R. 6s, 1st Mtg.	$5,000	36½@	38
" " " ex coupon	—	— @	30
Central RR. of N. J. 1st Mtg. N.	21,000	112¾@	113
" " " 1st Cons.	8,000	— @	105¼
" " " Cons. Convt.	8,000	— @	111
Am. Dock Imp. Bonds	10,000	93¾@@	102¾
Del. and H. C., 1st Mtg. Reg. 1891,	—	— @	110
Del. and Hudson Canal, 7s, 1894,	—	— @	107½
Del., Lack. & W. R. R., 7s, con.	—	— @	118
" " " " 2d Mtg.	—	— @	111
Morris and Essex, 1st Mtge.	3,000	112 @	112½
" " 2d "	—	— @	109
" " Construction	9,000	— @	103⅞
St. Louis & Iron Mount'n 1st Mtg.	6,000	— @	91½
St. Louis & Iron M'tn, 2d Mtg.	—	— @	49
Total Sales	$70,000		

Quotations in the last column, in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, July 16, 1875.

The Philadelphia stock market has been very dull during the week, the principal operators being out of the city. A gradual advance, however, has taken place in the majority of the stocks which we quote; the market for these closing firm at the highest point attained during the week. Operations have been principally confined to the Pennsylvania R R. stock, transactions in which have aggregated over 40,000 shares for the week. The coupons of the Lykens Valley Coal Co., due the 14th inst., will be paid by the Summit Branch R. R. Co. in this city. The coupons of the Wyoming Valley Canal Co., due July 15th, will be paid by the Pennsylvania Canal Co. at Philadelphia. The interest on the 6 per cent. '84 Reg. loan of the L. C. & N. Co. fell due the 14th inst., and will be paid at Philadelphia. A dividend of 6 per cent., payable July 14, has been declared by the Mount Carbon and Port Carbon R. R. Co. $6,000 Emaus Iron Co. first mortgage 7 per cent. bonds, principal and interest guaranteed by the P. & R. R. Co., were sold at auction on the 13th inst. at 91½. The Mill Creek and Minehill R. R. Co. have declared a dividend of 5 per cent., and the Schuylkill Nav. & R. R. Co. has also declared a dividend of 2½ per cent, both payable at Philadelphia July 14th. The United N. J. R. R. & Canal Co. was quoted at the close at 129½ bid.

QUOTATIONS AND SALES OF STOCKS:

	Highest	Lowest	Closing	Shr's
Catawissa RR.	—	—	20	—
" " Preferred	42¾	42½	42¾	64
" " New Preferred	—	—	38¾	12
Huntingdon and B. T. RR.	—	—	7	—
" " " Pref'd.	—	—	13¾	—
Lehigh Valley RR. Co.	61½	61¼	61½	717
Little Schuylkill RR	—	—	*50	128
Minehill R.R.	—	—	52½	2
Nesquehoning Valley RR.	—	—	56½	43
Northern Central RR.	—	—	29	—
North Pennsylvania RR.	—	—	51¼	—
Pennsylvania RR.	51	50¼	51	44855
Reading RR.	55	55¾	55	4050
Delaware Division Canal	—	—	—	—
Lehigh Coal and Nav. Canal.	50½	50¼	50½	13073
Morris Canal	—	—	51¼	—
" Preferred	—	—	133	48
Pennsylvania Canal.	—	—	—	—
Schuylkill Navigation Canal.	—	—	7¼	—
" " Preferred.	14¾	14⅝	14¾	15
Susquehanna Canal.	—	—	—	—
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co	—	—	—	—
Locust Mountain Coal Co.		—	—	—
Westmoreland Coal Co.	—	—	80	—
Cambria Iron Co	—	—	—	—
Crane Iron Co.	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	72	26
Total shares sold				63.033
Sales for the week previous				10,665
Increase				52,368

*Ex. Dividend.

Sales of the various bonds for the period under review have been as follows :

	Sales.	Price
Reading RR. 6s, 43,80	$1,000	—@102½
Catawissa, RR., new 7s	10,000	—@107½
H and B. T. RR. 2d mortgage, 7s	—	—@—
Lehigh convt. gold loan	—	—@—
Pa. and N. Y. Canal, 7s	10,000	105½@106
Schuyl. Nav. 6s, '95 ex coup	4,000	—@79
L. V. RR. con. mtge. 6s reg	10,000	98⅞@ 99
H. and B. T 1st Con. 7s. bonds	3,000	—@ 55
R. C. and I. Co. irregular mort. bonds, Brady Tract	—	—@—
Lehigh Nav. 6s. 1884	12,000	—@102½
Reading RR. debenture bonds	1,000	80 @—
" " G. M. 7s, con	6,000	107 @107½
" " new convertible 7s	1,900	105 @105¼
" " 7s, 91	—	—@—
Reading C. & I. Co. debent. bonds	—	—@—
Reading C. and I. Co. mort. bonds, Tamaqua Tract	—	—@—
Reading C. and I. Co. mort. bonds, St. Clair Tract	—	—@—
R. C. and I. Co., Wetherill tract.	—	—@—
" " " " " Locust Mountain Summit Improvement tract.	—	—@—
R. C. and I. Co., Helfenstein tract.	—	—@—
Lehigh C. & N. Co 6s	—	—@—
" " " 7s	—	—@—
Lehigh Coal and Nav. Co 6s, gold loan	—	—@—
Lehigh Coal and Nav. Co. con. l'n.	—	—@—
" " " " " RR loan	20,000	—@102½
Schuylkill Nav. 6s '97	—	—@—
" " 6 per cent boat loan	—	—@—
" " 7 p.c. boat loan	200	91½@—
R. C. & I. Co., Glentworth tract.	—	—@—
Chesapeake & Delaware Canal, 6s	—	—@—
Susquehanna Canal 6s	—	—@—
Pennsylvania Canal 6s	—	—@—
Shamokin Valley Pottsville RR. 7s	—	—@—
Del. Div. Canal, 6s	—	—@—
Morris Canal, 1st mtge. 6s	—	—@—
Total sales	$82,400	

Gold and Silver Stocks.

SAN FRANCISCO, July 14th, 1875.

A decline of $1 per share in Best and Belcher and of $6 per share in the Consolidated Virginia, are the only exceptions to a still further advance of the San Francisco Stock list. Unusual activity prevails at present in the Nevada, California, Idaho and Colorado mines; they are, almost without exception, reported in splendid condition, with labor plenty and comparatively cheap. The Savage Mining Co. has levied an assessment of $5 per share, delinquent July 25th. The Imperial Mining Co. has also levied an assessment of $1 per share, delinquent July 30th. The Eureka Consolidated Mining Co. paid a dividend of $2 per share on the 6th inst. out of their June earnings.

The Sacramento, Mariposa, Consolidated Virgina, Occidental, Hoosier State, Devil's Gate, French, and Bacon Mills some time since combined to secure timber to supply the mines, and arrangements have been completed for 100,000,000 feet of saw-logs, 30,000,000 feet of hewn timber, and 500,000 cords of firewood. A flume fifteen miles long has been constructed at a cost of $250,000 to transport it as required for use

The melter of the San Francisco branch mint received for coinage from October 17, 1874, to June 30, 1875, the following amount of bullion :

Gold bullion	$39,699 357
Silver bullion	8,353,546
Total	$48,052,903

The Carson City Mint coined the following bullion during the two past fiscal years :

	1874—5.	1873—4.
Gold (ounces)	200,000	177,000
Silver (ounces)	4,000,000	2,200,000
Total	4,200,000	2,377,000

It is reported that a combination is being formed in California to place the best known mining stocks on the list of the New York Stock Exchange.

An organization formed in Trenton, N. J, called the Colorado Smelting Company, has purchased the Idaho City Works and the Keith and Mammoth Mills at Black Hawk, and has commenced building new smelting works at Georgetown and Golden City, Col.

The total gold product of the San Francisco Refining Works for the past six months was $10,805,364.

Quotations July 14, 1875.

Gould & Curry	16	Overman	65
Savage	98	Raymond & Ely	57
Chollar Potosi	73	Eureka G. V.	5
Ophir	48	Best & Belcher	45
Hale and Norcross	38	Kentuck	15
Crown Point	31	Meadow Valley	7
Yellow Jacket	84	Alpha	19
Eureka Consolidated	62	Sierra Nevada	14
Belcher	28	Union Consolidated	7
Imperial	9	Mexican	20
Consolidated Virginia	309	Caledonia	19
California	57	Silver Hill	—

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Copper Stocks.

BOSTON, July 15, 1875.

Calumet and Hecla and Copper Falls are unchanged. With these exceptions the copper stock list is down and the dealings during the week have been very limited. We note recent sales of Franklin at $14 per share, Pewabic $5 per share, and also of the Winthrop Mining Companies stock at 60c. per share.

The Quincy Mining Company announces a dividend of $3 per share payable on and after August. 2d.

Quotations are as follows :

Allouez	16	National	..
Calumet and Hecla Co.	159	Petherick	..
Copper Falls	8	Quincy	40⅜
Central	25	Ridge	6
Franklin	..	Rockland	5c

Gas Stocks.

NEW YORK, July 16, 1875.

The following quotations of Gas Stocks represent prices which have been bid during the week :

Manhattan Gas Light Co.	New York		200
Metropolitan "	"	"	130
New York "	"	"	150
Mutual "	"	"	100
Harlem "	"	"	130½
Baltimore "	"	Baltimore, Md.	190
People's "	"	"	25⅝
Boston, Mass. "	"		765
Cambridge, "	"		132¾
Portland, Me. "	"		72
Hartford, Conn "	"		44½
San Francisco, Cal. "	"		99
Williamsburgh "	"		137½
Northern Liberties Gas Light Co.	Philadelphia		29½
Brooklyn "	"	"	240
Citizens' Gas Co.,	Brooklyn		101½
Nassau "	"	"	125¾
People's "	"	"	95
Westchester Co Gas Co.,	N. Y.		100
Williamsburg "	"	"	139

The coupons of the People's Gas Light and Coke Co. of Chicago, Ill., due May 1st and June 1st, will be paid on presentation in New York.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The second volume of Transactions has been mailed to all home members and associates not in arrears. Any member who failed to receive his copy will please notify the Secretary promptly. The Institute is not responsible for the loss of the volume in those cases where members have changed their residences and have omitted to inform the Secretary. Volumes I. and II. will be sent, post-paid, to non-members, at five dollars each.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

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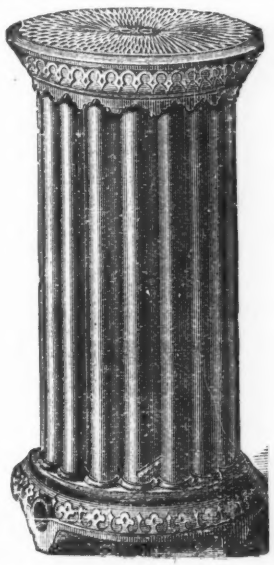

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Manager Chicago S. M. Co. (limited.)

Supt. Office EMMA HILL CONSOLIDATED M. Co. }
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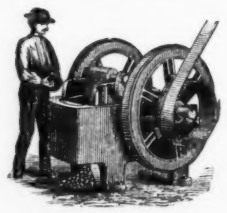

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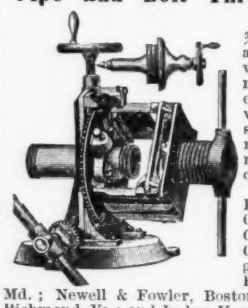

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Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B.'s new Transit (Dec. 1871) : "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviations which they have made from the common styles of Transit are decided improvements."
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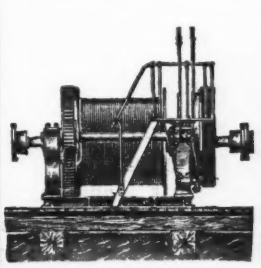

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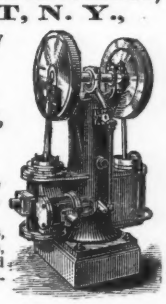

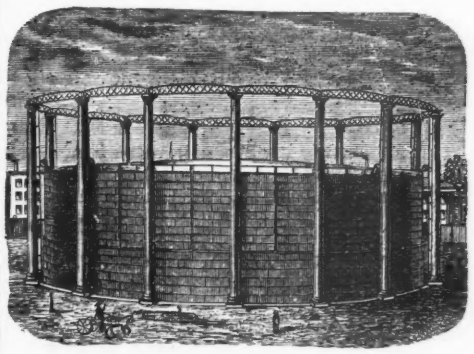

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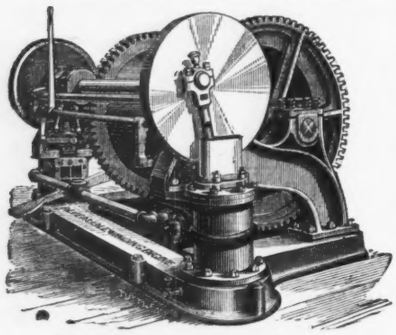

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